

# SEQUENCE LISTING

<110> Watson, James D.  
Tan, Paul L. J.

<120> Methods and Compounds for the Treatment  
of Immunologically-Mediated Diseases of the Respiratory  
System using Mycobacterium Vaccae

<130> 11000.1008c2

<150> US09/156,181

<151> 1998-09-17

<150> US 08/996,624

<151> 1997-12-23

<160> 208

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 25

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (7)...(7)

<400> 1

Ala	Pro	Val	Gly	Pro	Gly	Xaa	Ala	Ala	Tyr	Val	Gln	Gln	Val	Pro	Asp
1				5					10					15	
Gly	Pro	Gly	Ser	Val	Gln	Gly	Met	Ala							
			20				25								

<210> 2

<211> 10

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (2)...(2)

<400> 2

Met	Xaa	Asp	Gln	Leu	Lys	Val	Asn	Asp	Asp
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<210> 3

<211> 11

<212> PRT

<213> Mycobacterium vaccae

<220>

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<222> (2)...(2)

<400> 3

Met Xaa Pro Val Pro Val Ala Thr Ala Ala Tyr  
1 5 10

<210> 4  
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<212> PRT  
<213> Mycobacterium vaccae

<400> 4

Thr Pro Ala Pro Ala Pro Pro Tyr Val Asp His Val Glu Gln Ala  
1 5 10 15  
Lys Phe Gly Asp Leu  
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<210> 5  
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<212> PRT  
<213> Mycobacterium vaccae

<220>  
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<222> (25)...(25)

<400> 5

Met Gln Ala Phe Asn Ala Asp Ala Tyr Ala Phe Ala Lys Arg Glu Lys  
1 5 10 15  
Val Ser Leu Ala Pro Gly Val Pro Xaa Val Phe Glu Thr  
20 25

<210> 6  
<211> 21  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (6)...(6)

<400> 6

Met Ala Asp Pro Asn Xaa Ala Ile Leu Gln Val Ser Lys Thr Thr Arg  
1 5 10 15  
Gly Gly Gln Ala Ala  
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<210> 7  
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<212> PRT  
<213> Mycobacterium vaccae

<400> 7

Met Pro Ile Leu Gln Val Ser Gln Thr Gly Arg  
1 5 10

<210> 8  
 <211> 14  
 <212> PRT  
 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (2)...(2)

<221> UNSURE  
 <222> (6)...(6)

<400> 8  
 Met Xaa Asp Pro Ile Xaa Leu Gln Leu Gln Val Ser Ser Thr  
 1 5 10

<210> 9  
 <211> 16  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 9  
 Lys Ala Thr Tyr Val Gln Gly Gly Leu Gly Arg Ile Glu Ala Arg Val  
 1 5 10 15

<210> 10  
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 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (2)...(2)

<400> 10  
 Lys Xaa Gly Leu Ala Asp Leu Ala Pro  
 1 5

<210> 11  
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<220>  
 <221> UNSURE  
 <222> (12)...(12)  
 <223> Residue can be either Glu or Ile

<221> UNSURE  
 <222> (2)...(2)

<400> 11  
 Lys Xaa Tyr Ala Leu Ala Leu Met Ser Ala Val Xaa Ala Ala  
 1 5 10

<210> 12  
 <211> 11

<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (10)...(10)

<400> 12  
Lys Asn Pro Gln Val Ser Asp Glu Leu Xaa Thr  
1 5 10

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<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (9)...(9)

<400> 13  
Ala Pro Ala Pro Ala Ala Pro Ala Xaa Gly Asp Pro Ala Ala Val Val  
1 5 10 15  
Ala Ala Met Ser Thr  
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<210> 14  
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<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (5)...(5)

<400> 14  
Glu Ala Glu Val Xaa Tyr Leu Gly Gln Pro Gly Glu Leu Val Asn  
1 5 10 15

<210> 15  
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<213> Mycobacterium vaccae

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<221> UNSURE  
<222> (2)...(2)  
<223> Residue can be either Gly or Ala

<221> UNSURE  
<222> (15)...(15)  
<223> Residue can be either Pro or Ala

<221> UNSURE  
<222> (7)...(7)

<400> 15



Ala Xaa Val Val Pro Pro Xaa Gly Pro Pro Ala Pro Gly Ala Xaa  
 1 5 10 15

<210> 16  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 16  
 Ala Pro Ala Pro Asp Leu Gln Gly Pro Leu Val Ser Thr Leu Ser  
 1 5 10 15

<210> 17  
 <211> 25  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 17  
 Ala Thr Pro Asp Trp Ser Gly Arg Tyr Thr Val Val Thr Phe Ala Ser  
 1 5 10 15  
 Asp Lys Leu Gly Thr Ser Val Ala Ala  
 20 25

<210> 18  
 <211> 25  
 <212> PRT  
 <213> Mycobacterium vaccae  
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 <222> (15)...(15)  
 <223> Residue can be either Ala or Arg  
 <221> UNSURE  
 <222> (23)...(23)  
 <223> Residue can be either Val or Leu  
 <221> UNSURE  
 <222> (16)...(16)

<400> 18  
 Ala Pro Pro Tyr Asp Asp Arg Gly Tyr Val Asp Ser Thr Ala Xaa Xaa  
 1 5 10 15  
 Ala Ser Pro Pro Thr Leu Xaa Val Val  
 20 25

<210> 19  
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 <212> PRT  
 <213> Mycobacterium vaccae

<400> 19  
 Glu Pro Glu Gly Val Ala Pro Pro  
 1 5

<210> 20  
 <211> 25

<212> PRT  
<213> Mycobacterium vaccae

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<222> (21)...(22)

<400> 20  
Glu Pro Ala Gly Ile Pro Ala Gly Phe Pro Asp Val Ser Ala Tyr Ala  
1 5 10 15  
Ala Val Asp Pro Xaa Xaa Tyr Val Val  
20 25

<210> 21  
<211> 15  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (7)...(7)

<400> 21  
Ala Pro Val Gly Pro Gly Xaa Ala Ala Tyr Val Gln Gln Val Pro  
1 5 10 15

<210> 22  
<211> 15  
<212> PRT  
<213> Mycobacterium vaccae

<400> 22  
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Met Val Pro Ser  
1 5 10 15

<210> 23  
<211> 19  
<212> PRT  
<213> Mycobacterium vaccae

<400> 23  
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Met Val Pro Ser Pro  
1 5 10 15  
Ser Met Gly

<210> 24  
<211> 15  
<212> PRT  
<213> Mycobacterium vaccae

<400> 24  
Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu Asp Val Phe Ser  
1 5 10 15

<210> 25  
<211> 14

<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (1)...(2)

<400> 25  
Xaa Xaa Thr Gly Leu His Arg Leu Arg Met Met Val Pro Asn  
1 5 10

<210> 26  
<211> 20  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
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<222> (16)...(16)  
<223> Residue can be either Ser or Val

<221> UNSURE  
<222> (17)...(17)  
<223> Residue can be either Gln or Val

<400> 26  
Val Pro Ala Asp Pro Val Gly Ala Ala Ala Gln Ala Glu Pro Ala Xaa  
1 5 10 15  
Xaa Arg Ile Asp  
20

<210> 27  
<211> 14  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (4)...(4)  
<223> Residue can be either Tyr or Pro

<221> UNSURE  
<222> (8)...(8)  
<223> Residue can be either Val or Gly

<221> UNSURE  
<222> (9)...(9)  
<223> Residue can be either Ile or Tyr

<221> UNSURE  
<222> (3)...(3)

<400> 27  
Asp Pro Xaa Xaa Asp Ile Glu Xaa Xaa Phe Ala Arg Gly Thr  
1 5 10

<210> 28

<211> 15  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 28  
 Ala Pro Ser Leu Ser Val Ser Asp Tyr Ala Arg Asp Ala Gly Phe  
 1 5 10 15

<210> 29  
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 <212> PRT  
 <213> Mycobacterium vaccae

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 <223> Residue can be either Leu or Pro

<221> UNSURE  
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<221> UNSURE  
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<221> UNSURE  
 <222> (10)...(10)

<400> 29  
 Xaa Xaa Leu Ala Xaa Ala Xaa Leu Gly Xaa Thr Val Asp Ala Asp Gln  
 1 5 10 15

<210> 30  
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 <212> PRT  
 <213> Mycobacterium leprae

<400> 30  
 Met Lys Phe Val Asp Arg Phe Arg Gly Ala Val Ala Gly Met Leu Arg  
 1 5 10 15  
 Arg Leu Val Val Glu Ala Met Gly Val Ala Leu Leu Ser Ala Leu Ile  
 20 25 30  
 Gly Val Val Gly Ser Ala Pro Ala Glu Ala Phe Ser Arg Pro Gly Leu  
 35 40 45  
 Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile  
 50 55 60  
 Lys Val Gln Phe Gln Asn Gly Gly Ala Asn Ser Pro Ala Leu Tyr Leu  
 65 70 75 80  
 Leu Asp Gly Leu Arg Ala Gln Asp Asp Phe Ser Gly Trp Asp Ile Asn  
 85 90 95  
 Thr Thr Ala Phe Glu Trp Tyr Tyr Gln Ser Gly Ile Ser Val Val Met  
 100 105 110  
 Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala  
 115 120 125  
 Cys Gly Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu Thr

	130					135				140							
Ser	Glu	Leu	Pro	Glu	Tyr	Leu	Gln	Ser	Asn	Lys	Gln	Ile	Lys	Pro	Thr		
145					150					155						160	
Gly	Ser	Ala	Ala	Val	Gly	Leu	Ser	Met	Ala	Gly	Leu	Ser	Ala	Leu	Thr		
				165					170						175		
Leu	Ala	Ile	Tyr	His	Pro	Asp	Gln	Phe	Ile	Tyr	Val	Gly	Ser	Met	Ser		
			180					185						190			
Gly	Leu	Leu	Asp	Pro	Ser	Asn	Ala	Met	Gly	Pro	Ser	Leu	Ile	Gly	Leu		
		195					200					205					
Ala	Met	Gly	Asp	Ala	Gly	Gly	Tyr	Lys	Ala	Ala	Asp	Met	Trp	Gly	Pro		
	210					215				220							
Ser	Thr	Asp	Pro	Ala	Trp	Lys	Arg	Asn	Asp	Pro	Thr	Val	Asn	Val	Gly		
225					230				235						240		
Thr	Leu	Ile	Ala	Asn	Asn	Thr	Arg	Ile	Trp	Met	Tyr	Cys	Gly	Asn	Gly		
				245					250					255			
Lys	Pro	Thr	Glu	Leu	Gly	Gly	Asn	Asn	Leu	Pro	Ala	Lys	Leu	Leu	Glu		
			260				265						270				
Gly	Leu	Val	Arg	Thr	Ser	Asn	Ile	Lys	Phe	Gln	Asp	Gly	Tyr	Asn	Ala		
		275					280				285						
Gly	Gly	Gly	His	Asn	Ala	Val	Phe	Asn	Phe	Pro	Asp	Ser	Gly	Thr	His		
	290					295				300							
Ser	Trp	Glu	Tyr	Trp	Gly	Glu	Gln	Leu	Asn	Asp	Met	Lys	Pro	Asp	Leu		
305					310					315					320		
Gln	Gln	Tyr	Leu	Gly	Ala	Thr	Pro	Gly	Ala								
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<210> 31
<211> 327
<212> PRT
<213> Mycobacterium leprae
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	<400> 31														
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Val	Gly	Ala	Ala 20	Ala	Thr	Leu	Pro	Ser 25	Leu	Ile	Ser	Leu	Ala 30	Gly	Gly
Ala	Ala	Thr 35	Ala	Ser	Ala	Phe	Ser 40	Arg	Pro	Gly	Leu	Pro 45	Val	Glu	Tyr
Leu	Gln 50	Val	Pro	Ser	Glu	Ala 55	Met	Gly	Arg	Thr	Ile 60	Lys	Val	Gln	Phe
Gln 65	Asn	Gly	Gly	Asn 70	Gly	Ser	Pro	Ala	Val	Tyr 75	Leu	Leu	Asp	Gly 80	Leu
Arg	Ala	Gln	Asp 85	Asp	Tyr	Asn	Gly	Trp	Asp 90	Ile	Asn	Thr	Ser 95	Ala	Phe
Glu	Trp	Tyr	Tyr 100	Gln	Ser	Gly	Leu	Ser	Val 105	Val	Met	Pro	Val 110	Gly	Gly
Gln	Ser	Ser 115	Phe	Tyr	Ser	Asp	Trp 120	Tyr	Ser	Pro	Ala	Cys 125	Gly	Lys	Ala
Gly	Cys 130	Thr	Thr	Tyr	Lys	Trp 135	Glu	Thr	Phe	Leu	Thr 140	Ser	Glu	Leu	Pro
Lys 145	Trp	Leu	Ser	Ala	Asn 150	Arg	Ser	Val	Lys	Ser 155	Thr	Gly	Ser	Ala	Val
Val	Gly	Leu	Ser 165	Met	Ala	Gly	Ser	Ser	Ala 170	Leu	Ile	Leu	Ala 175	Ala	Tyr
His	Pro	Asp	Gln 180	Phe	Ile	Tyr	Ala 185	Gly	Ser	Leu	Ser	Ala 190	Leu	Met	Asp
Ser	Ser	Gln	Gly	Ile	Glu	Pro	Gln	Leu	Ile	Gly	Leu	Ala	Met	Gly	Asp

195	200	205
Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Pro Asn Asp Pro		
210	215	220
Ala Trp Gln Arg Asn Asp Pro Ile Leu Gln Ala Gly Lys Leu Val Ala		
225	230	235
Asn Asn Thr His Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro Ser Glu		
245	250	255
Leu Gly Gly Thr Asn Val Pro Ala Glu Phe Leu Glu Asn Phe Val His		
260	265	270
Gly Ser Asn Leu Lys Phe Gln Asp Ala Tyr Asn Gly Ala Gly Gly His		
275	280	285
Asn Ala Val Phe Asn Leu Asn Ala Asp Gly Thr His Ser Trp Glu Tyr		
290	295	300
Trp Gly Ala Gln Leu Asn Ala Met Lys Pro Asp Leu Gln Asn Thr Leu		
305	310	315
Met Ala Val Pro Arg Ser Gly		320
325		

<210> 32  
 <211> 338  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 32
Met Gln Leu Val Asp Arg Val Arg Gly Ala Val Thr Gly Met Ser Arg
1 5 10 15
Arg Leu Val Val Gly Ala Val Gly Ala Ala Leu Val Ser Gly Leu Val
20 25 30
Gly Ala Val Gly Gly Thr Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly
35 40 45
Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp
50 55 60
Ile Lys Val Gln Phe Gln Ser Gly Gly Ala Asn Ser Pro Ala Leu Tyr
65 70 75 80
Leu Leu Asp Gly Leu Arg Ala Gln Asp Asp Phe Ser Gly Trp Asp Ile
85 90 95
Asn Thr Pro Ala Phe Glu Trp Tyr Asp Gln Ser Gly Leu Ser Val Val
100 105 110
Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Gln Pro
115 120 125
Ala Cys Gly Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu
130 135 140
Thr Ser Glu Leu Pro Gly Trp Leu Gln Ala Asn Arg His Val Lys Pro
145 150 155 160
Thr Gly Ser Ala Val Val Gly Leu Ser Met Ala Ala Ser Ser Ala Leu
165 170 175
Thr Leu Ala Ile Tyr His Pro Gln Gln Phe Val Tyr Ala Gly Ala Met
180 185 190
Ser Gly Leu Leu Asp Pro Ser Gln Ala Met Gly Pro Thr Leu Ile Gly
195 200 205
Leu Ala Met Gly Asp Ala Gly Tyr Lys Ala Ser Asp Met Trp Gly
210 215 220
Pro Lys Glu Asp Pro Ala Trp Gln Arg Asn Asp Pro Leu Leu Asn Val
225 230 235 240
Gly Lys Leu Ile Ala Asn Asn Thr Arg Val Trp Val Tyr Cys Gly Asn
245 250 255
Gly Lys Pro Ser Asp Leu Gly Gly Asn Asn Leu Pro Ala Lys Phe Leu

260 265 270  
 Glu Gly Phe Val Arg Thr Ser Asn Ile Lys Phe Gln Asp Ala Tyr Asn  
 275 280 285  
 Ala Gly Gly Gly His Asn Gly Val Phe Asp Phe Pro Asp Ser Gly Thr  
 290 295 300  
 His Ser Trp Glu Tyr Trp Gly Ala Gln Leu Asn Ala Met Lys Pro Asp  
 305 310 315 320  
 Leu Gln Arg Ala Leu Gly Ala Thr Pro Asn Thr Gly Pro Ala Pro Gln  
 325 330 335  
 Gly Ala

<210> 33  
 <211> 325  
 <212> PRT  
 <213> Mycobacterium tuberculosis

<400> 33  
 Met Thr Asp Val Ser Arg Lys Ile Arg Ala Trp Gly Arg Arg Leu Met  
 1 5 10 15  
 Ile Gly Thr Ala Ala Ala Val Val Leu Pro Gly Leu Val Gly Leu Ala  
 20 25 30  
 Gly Gly Ala Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly Leu Pro Val  
 35 40 45  
 Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val  
 50 55 60  
 Gln Phe Gln Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp  
 65 70 75 80  
 Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro  
 85 90 95  
 Ala Phe Glu Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val  
 100 105 110  
 Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly  
 115 120 125  
 Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu Thr Ser Glu  
 130 135 140  
 Leu Pro Gln Trp Leu Ser Ala Asn Arg Ala Val Lys Pro Thr Gly Ser  
 145 150 155 160  
 Ala Ala Ile Gly Leu Ser Met Ala Gly Ser Ser Ala Met Ile Leu Ala  
 165 170 175  
 Ala Tyr His Pro Gln Gln Phe Ile Tyr Ala Gly Ser Leu Ser Ala Leu  
 180 185 190  
 Leu Asp Pro Ser Gln Gly Met Gly Pro Ser Leu Ile Gly Leu Ala Met  
 195 200 205  
 Gly Asp Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Ser Ser  
 210 215 220  
 Asp Pro Ala Trp Glu Arg Asn Asp Pro Thr Gln Gln Ile Pro Lys Leu  
 225 230 235 240  
 Val Ala Asn Asn Thr Arg Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro  
 245 250 255  
 Asn Glu Leu Gly Gly Ala Asn Ile Pro Ala Glu Phe Leu Glu Asn Phe  
 260 265 270  
 Val Arg Ser Ser Asn Leu Lys Phe Gln Asp Ala Tyr Asn Ala Ala Gly  
 275 280 285  
 Gly His Asn Ala Val Phe Asn Phe Pro Pro Asn Gly Thr His Ser Trp  
 290 295 300  
 Glu Tyr Trp Gly Ala Gln Leu Asn Ala Met Lys Gly Asp Leu Gln Ser

305                      310                      315                      320  
 Ser Leu Gly Ala Gly  
                          325

<210> 34  
 <211> 338  
 <212> PRT  
 <213> Mycobacterium bovis

<400> 34

Met	Gln	Leu	Val	Asp	Arg	Val	Arg	Gly	Ala	Val	Thr	Gly	Met	Ser	Arg
1				5					10					15	
Arg	Leu	Val	Val	Gly	Ala	Val	Gly	Ala	Ala	Leu	Val	Ser	Gly	Leu	Val
			20					25					30		
Gly	Ala	Val	Gly	Gly	Thr	Ala	Thr	Ala	Gly	Ala	Phe	Ser	Arg	Pro	Gly
		35					40					45			
Leu	Pro	Val	Glu	Tyr	Leu	Gln	Val	Pro	Ser	Pro	Ser	Met	Gly	Arg	Asp
		50				55					60				
Ile	Lys	Val	Gln	Phe	Gln	Ser	Gly	Gly	Ala	Asn	Ser	Pro	Ala	Leu	Tyr
65					70					75					80
Leu	Leu	Asp	Gly	Leu	Arg	Ala	Gln	Asp	Asp	Phe	Ser	Gly	Trp	Asp	Ile
				85					90					95	
Asn	Thr	Pro	Ala	Phe	Glu	Trp	Tyr	Asp	Gln	Ser	Gly	Leu	Ser	Val	Val
			100					105					110		
Met	Pro	Val	Gly	Gly	Gln	Ser	Ser	Phe	Tyr	Ser	Asp	Trp	Tyr	Gln	Pro
		115					120					125			
Ala	Cys	Gly	Lys	Ala	Gly	Cys	Gln	Thr	Tyr	Lys	Trp	Glu	Thr	Phe	Leu
	130					135					140				
Thr	Ser	Glu	Leu	Pro	Gly	Trp	Leu	Gln	Ala	Asn	Arg	His	Val	Lys	Pro
145					150					155					160
Thr	Gly	Ser	Ala	Val	Val	Gly	Leu	Ser	Met	Ala	Ala	Ser	Ser	Ala	Leu
			165						170					175	
Thr	Leu	Ala	Ile	Tyr	His	Pro	Gln	Gln	Phe	Val	Tyr	Ala	Gly	Ala	Met
			180					185					190		
Ser	Gly	Leu	Leu	Asp	Pro	Ser	Gln	Ala	Met	Gly	Pro	Thr	Leu	Ile	Gly
		195					200					205			
Leu	Ala	Met	Gly	Asp	Ala	Gly	Gly	Tyr	Lys	Ala	Ser	Asp	Met	Trp	Gly
	210					215					220				
Pro	Lys	Glu	Asp	Pro	Ala	Trp	Gln	Arg	Asn	Asp	Pro	Leu	Leu	Asn	Val
225					230					235					240
Gly	Lys	Leu	Ile	Ala	Asn	Asn	Thr	Arg	Val	Trp	Val	Tyr	Cys	Gly	Asn
			245					250					255		
Gly	Lys	Pro	Ser	Asp	Leu	Gly	Gly	Asn	Asn	Leu	Pro	Ala	Lys	Phe	Leu
			260					265					270		
Glu	Gly	Phe	Val	Arg	Thr	Ser	Asn	Ile	Lys	Phe	Gln	Asp	Ala	Tyr	Asn
	275						280					285			
Ala	Gly	Gly	Gly	His	Asn	Gly	Val	Phe	Asp	Phe	Pro	Asp	Ser	Gly	Thr
	290					295					300				
His	Ser	Trp	Glu	Tyr	Trp	Gly	Ala	Gln	Leu	Asn	Ala	Met	Lys	Pro	Asp
305					310					315					320
Leu	Gln	Arg	Ala	Leu	Gly	Ala	Thr	Pro	Asn	Thr	Gly	Pro	Ala	Pro	Gln
			325					330					335		

Gly Ala

<210> 35  
 <211> 323



<212> PRT

<213> Mycobacterium bovis

<400> 35

Met Thr Asp Val Ser Arg Lys Ile Arg Ala Trp Gly Arg Arg Leu Met  
1 5 10 15  
Ile Gly Thr Ala Ala Ala Val Val Leu Pro Gly Leu Val Gly Leu Ala  
20 25 30  
Gly Gly Ala Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly Leu Pro Val  
35 40 45  
Glu Tyr Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val  
50 55 60  
Gln Phe Gln Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp  
65 70 75 80  
Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro  
85 90 95  
Ala Phe Glu Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val  
100 105 110  
Gly Gly Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly  
115 120 125  
Lys Ala Gly Cys Gln Thr Tyr Lys Trp Glu Thr Leu Leu Thr Ser Glu  
130 135 140  
Leu Pro Gln Trp Leu Ser Ala Asn Arg Ala Val Lys Pro Thr Gly Ser  
145 150 155 160  
Ala Ala Ile Gly Leu Ser Met Ala Gly Ser Ser Ala Met Ile Leu Ala  
165 170 175  
Ala Tyr His Pro Gln Gln Phe Ile Tyr Ala Gly Ser Leu Ser Ala Leu  
180 185 190  
Leu Asp Pro Ser Gln Gly Met Gly Leu Ile Gly Leu Ala Met Gly Asp  
195 200 205  
Ala Gly Gly Tyr Lys Ala Ala Asp Met Trp Gly Pro Ser Ser Asp Pro  
210 215 220  
Ala Trp Glu Arg Asn Asp Pro Thr Gln Gln Ile Pro Lys Leu Val Ala  
225 230 235 240  
Asn Asn Thr Arg Leu Trp Val Tyr Cys Gly Asn Gly Thr Pro Asn Glu  
245 250 255  
Leu Gly Gly Ala Asn Ile Pro Ala Glu Phe Leu Glu Asn Phe Val Arg  
260 265 270  
Ser Ser Asn Leu Lys Phe Gln Asp Ala Tyr Lys Pro Ala Gly Gly His  
275 280 285  
Asn Ala Val Phe Asn Phe Pro Pro Asn Gly Thr His Ser Trp Glu Tyr  
290 295 300  
Trp Gly Ala Gln Leu Asn Ala Met Lys Gly Asp Leu Gln Ser Ser Leu  
305 310 315 320  
Gly Ala Gly

<210> 36

<211> 333

<212> PRT

<213> Mycobacterium leprae

<400> 36

Met Lys Phe Leu Gln Gln Met Arg Lys Leu Phe Gly Leu Ala Ala Lys  
1 5 10 15  
Phe Pro Ala Arg Leu Thr Ile Ala Val Ile Gly Thr Ala Leu Leu Ala  
20 25 30

Gly Leu Val Gly Val Val Gly Asp Thr Ala Ile Ala Val Ala Phe Ser  
35 40 45  
Lys Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Pro Ser Met  
50 55 60  
Gly His Asp Ile Lys Ile Gln Phe Gln Gly Gly Gln His Ala Val  
65 70 75 80  
Tyr Leu Leu Asp Gly Leu Arg Ala Gln Glu Asp Tyr Asn Gly Trp Asp  
85 90 95  
Ile Asn Thr Pro Ala Phe Glu Glu Tyr Tyr His Ser Gly Leu Ser Val  
100 105 110  
Ile Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Ser Asn Trp Tyr Gln  
115 120 125  
Pro Ser Gln Gly Asn Gly Gln His Tyr Thr Tyr Lys Trp Glu Thr Phe  
130 135 140  
Leu Thr Gln Glu Met Pro Ser Trp Leu Gln Ala Asn Lys Asn Val Leu  
145 150 155 160  
Pro Thr Gly Asn Ala Ala Val Gly Leu Ser Met Ser Gly Ser Ser Ala  
165 170 175  
Leu Ile Leu Ala Ser Tyr Tyr Pro Gln Gln Phe Pro Tyr Ala Ala Ser  
180 185 190  
Leu Ser Gly Phe Leu Asn Pro Ser Glu Gly Trp Trp Pro Thr Met Ile  
195 200 205  
Gly Leu Ala Met Asn Asp Ser Gly Gly Tyr Asn Ala Asn Ser Met Trp  
210 215 220  
Gly Pro Ser Thr Asp Pro Ala Trp Lys Arg Asn Asp Pro Met Val Gln  
225 230 235 240  
Ile Pro Arg Leu Val Ala Asn Asn Thr Arg Ile Trp Val Tyr Cys Gly  
245 250 255  
Asn Gly Ala Pro Asn Glu Leu Gly Gly Asp Asn Ile Pro Ala Lys Phe  
260 265 270  
Leu Glu Ser Leu Thr Leu Ser Thr Asn Glu Ile Phe Gln Asn Thr Tyr  
275 280 285  
Ala Ala Ser Gly Gly Arg Asn Gly Val Phe Asn Phe Pro Pro Asn Gly  
290 295 300  
Thr His Ser Trp Pro Tyr Trp Asn Gln Gln Leu Val Ala Met Lys Pro  
305 310 315 320  
Asp Ile Gln Gln Ile Leu Asn Gly Ser Asn Asn Asn Ala  
325 330

<210> 37  
<211> 340  
<212> PRT  
<213> Mycobacterium tuberculosis

<400> 37  
Met Thr Phe Phe Glu Gln Val Arg Arg Leu Arg Ser Ala Ala Thr Thr  
1 5 10 15  
Leu Pro Arg Arg Val Ala Ile Ala Ala Met Gly Ala Val Leu Val Tyr  
20 25 30  
Gly Leu Val Gly Thr Phe Gly Gly Pro Ala Thr Ala Gly Ala Phe Ser  
35 40 45  
Arg Pro Gly Leu Pro Val Glu Tyr Leu Gln Val Pro Ser Ala Ser Met  
50 55 60  
Gly Arg Asp Ile Lys Val Gln Phe Gln Gly Gly Gly Pro His Ala Val  
65 70 75 80  
Tyr Leu Leu Asp Gly Leu Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp  
85 90 95

Ile Asn Thr Pro Ala Phe Glu Glu Tyr Tyr Gln Ser Gly Leu Ser Val  
100 105 110  
Ile Met Pro Val Gly Gly Gln Ser Ser Phe Tyr Thr Asp Trp Tyr Gln  
115 120 125  
Pro Ser Gln Ser Asn Gly Gln Asn Tyr Thr Tyr Lys Trp Glu Thr Phe  
130 135 140  
Leu Thr Arg Glu Met Pro Ala Trp Leu Gln Ala Asn Lys Gly Val Ser  
145 150 155 160  
Pro Thr Gly Asn Ala Val Gly Leu Ser Met Ser Gly Gly Ser Ala  
165 170 175  
Leu Ile Leu Ala Ala Tyr Tyr Pro Gln Gln Phe Pro Tyr Ala Ala Ser  
180 185 190  
Leu Ser Gly Phe Leu Asn Pro Ser Glu Gly Trp Trp Pro Thr Leu Ile  
195 200 205  
Gly Leu Ala Met Asn Asp Ser Gly Gly Tyr Asn Ala Asn Ser Met Trp  
210 215 220  
Gly Pro Ser Ser Asp Pro Ala Trp Lys Arg Asn Asp Pro Met Val Gln  
225 230 235 240  
Ile Pro Arg Leu Val Ala Asn Asn Thr Arg Ile Trp Val Tyr Cys Gly  
245 250 255  
Asn Gly Thr Pro Ser Asp Leu Gly Gly Asp Asn Ile Pro Ala Lys Phe  
260 265 270  
Leu Glu Gly Leu Thr Leu Arg Thr Asn Gln Thr Phe Arg Asp Thr Tyr  
275 280 285  
Ala Ala Asp Gly Gly Arg Asn Gly Val Phe Asn Phe Pro Pro Asn Gly  
290 295 300  
Thr His Ser Trp Pro Tyr Trp Asn Glu Gln Leu Val Ala Met Lys Ala  
305 310 315 320  
Asp Ile Gln His Val Leu Asn Gly Ala Thr Pro Pro Ala Ala Pro Ala  
325 330 335  
Ala Pro Ala Ala  
340

<210> 38  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Probe made in a lab

<400> 38  
agcggctggg acatcaacac

20

<210> 39  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Probe made in a lab

<400> 39  
cagacgcggg tgttggtggc

20

<210> 40  
<211> 1211

<212> DNA

<213> Mycobacterium vaccae

<400> 40

ggtaccggaa	gctggaggat	tgacgggatg	agacttcttg	acaggattcg	tgggccttgg	60
gcacgccgtt	tggcgctcgt	ggctgtcgcg	acagcgatga	tgcttgcttt	ggtgggcctg	120
gctggagggt	cggcgaccgc	cggagcattc	tcccggccag	gtctgcccgt	ggagtacctg	180
atggtgcctt	cgccgtcgat	ggggcgcgac	atcaagatcc	agttccagag	cggtggcgag	240
aactcgccgg	ctctctacct	gctcgacggc	ctcggtgcgc	aggaggactt	caacggctgg	300
gacatcaaca	ctcaggcttt	cgagtgggtc	ctcgacagcg	gcatctccgt	ggtgatgccg	360
gtcgggtggc	agtccagctt	ctacaccgac	tggtagccgc	ccgcccgtaa	caagggcccg	420
accgtgacct	acaagtggga	gaccttccct	acccaggagc	tcccgggctg	gctgcaggcc	480
aaccgcgcgg	tcaagccgac	cggcagcggc	cctgtcgggt	tgtcgatggc	gggttcggcc	540
gcgctgaacc	tggcgacctg	gcacccggag	cagttcatct	acgcgggctc	gatgtccggc	600
ttctgaacc	cctccgaggg	ctgggtggcg	ttctgatca	acatctcgat	gggtgacgcc	660
ggcggcttca	aggccgacga	catgtggggc	aagaccgagg	ggatcccaac	agcggttgga	720
cagcgcaacg	atccgatgct	gaacatccc	accctggctg	ccaacaacac	ccgtatctgg	780
gtctactgcg	gtaacggcca	gcccaccgag	ctcggcgggc	gcgacctgcc	cgccacgttc	840
ctcgaaggtc	tgaccatccg	caccaacgag	accttccgcg	acaactacat	cgcgcgggtt	900
ggccacaacg	gtgtgttcaa	cttcccggcc	aacggcacgc	acaactgggc	gtactggggt	960
cgcgagctgc	aggcgatgaa	gcctgacctg	caggcgcaac	ttctctgacg	gttgacgaa	1020
acgaagcccc	cggccgattg	cggccgaggg	ttctgctcgc	cggggctact	gtggccgaca	1080
taaccgaaat	caacgcgatg	gtggctcatc	aggaacgccg	aggggggtcat	tgcgctacga	1140
cacgaggtgg	gcgagcaatc	cttctgccc	gacggagagg	tcaacatcca	cgtcgagtac	1200
tccagcgtga	a					1211

<210> 41

<211> 485

<212> DNA

<213> Mycobacterium vaccae

<400> 41

agcggctggg	acatcaaac	cggcgcttc	gagtggtaag	tgcactcggg	tctcgcggtg	60
atcatgccc	tggcgggca	gtccagcttc	tacagcgact	ggtacagccc	ggcctgcggg	120
aaggccggct	gccagacct	caagtgggag	acgttccctga	cccaggagct	gccggcctac	180
ctcgccgcca	acaagggggt	cgacccgaac	cgcaacgcgg	ccgtcgggtc	gtccatggcc	240
ggttcggcgg	cgtgacgct	ggcgatctac	caccgcagc	agttccagta	cgcggggtcg	300
ctgtcgggct	acctgaaccc	gtccgagggg	tgggtggcga	tgctgatcaa	catctcgatg	360
ggtgacgcgg	gcggctacaa	ggccaacgac	atgtgggggt	caccgaagga	cccagcagc	420
gcctggaagc	gcaacgaccc	gatggtcaac	atcggcaagc	tgggtggccaa	caacaccccc	480
ctctc						485

<210> 42

<211> 1052

<212> DNA

<213> Mycobacterium vaccae

<400> 42

gttgatgaga	aaggtgggtt	gtttgccgtt	atgaagttca	cagagaagtg	gcggggctcc	60
gcaaaggcgg	cgatgcaccg	ggtgggcgtt	gccgatatgg	ccgccgttgc	gctgcccgga	120
ctgatcggct	tgcgcggggg	ttcggcaacg	gccggggcat	tctcccggcc	cggctcttct	180
gtcgagtacc	tcgacgtgtt	ctcgccgtcg	atgggcccgc	acatccgggt	ccagttccag	240
gggtggcgga	ctcatgcgtt	ctacctgctc	gacggctctg	gtgcccagga	cgactacaac	300
ggctgggaca	tcaacacccc	tgcgttcgag	tggttctacg	agtcgggctt	gtcgacgatc	360
atgccggtcg	gcggacagtc	cagcttctac	agcgactggg	accagccgtc	tccggggcaac	420
gggcagaact	acacctacaa	gtgggagacg	ttcctgaccc	aggagctgcc	gacgtggctg	480
gaggccaacc	gcggagtgtc	gcgcaccggc	aacgcgttcg	tccgcctgtc	gatggcgggc	540

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agcgcggcgc tgacctacgc gatccatcac cgcgagcagt tcacctacgc ctgcgtcgctg 600
tcaggcttcc tgaacccgctc cgagggctgg tggccgatgc tgatcgggct ggcgatgaac 660
gacgcaggcg gcttcaacgc cgagagcatg tggggcccggt cctcggaacc ggcggtggaag 720
cgcaacgacc cgatggtcaa catcaaccag ctggtggcca acaacacccg gatctggatc 780
tactgcgcca cgggcacccc gtcggagctg gacaccggga ccccgggcca gaacctgatg 840
gccgcgcagt tcctcgaagg attcacgttg cggaccaaca tcgccttcgc tgacaactac 900
atcgagcccg gcggcaccaa cgggtgtcttc aacttcccgg cctcgggcac ccacagctgg 960
gggtactggg ggcagcagct gcagcagatg aagcccgaca tccagcgggt tctgggagct 1020
caggccaccg cctagccacc caccacacac cc 1052

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<210> 43  
 <211> 326  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 43

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Met Arg Leu Leu Asp Arg Ile Arg Gly Pro Trp Ala Arg Arg Phe Gly
 1          5          10          15
Val Val Ala Val Ala Thr Ala Met Met Pro Ala Leu Val Gly Leu Ala
 20          25          30
Gly Gly Ser Ala Thr Ala Gly Ala Phe Ser Arg Pro Gly Leu Pro Val
 35          40          45
Glu Tyr Leu Met Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Ile
 50          55          60
Gln Phe Gln Ser Gly Gly Glu Asn Ser Pro Ala Leu Tyr Leu Leu Asp
 65          70          75          80
Gly Leu Arg Ala Gln Glu Asp Phe Asn Gly Trp Asp Ile Asn Thr Gln
 85          90          95
Ala Phe Glu Trp Phe Leu Asp Ser Gly Ile Ser Val Val Met Pro Val
 100          105          110
Gly Gly Gln Ser Ser Phe Tyr Thr Asp Trp Tyr Ala Pro Ala Arg Asn
 115          120          125
Lys Gly Pro Thr Val Thr Tyr Lys Trp Glu Thr Phe Leu Thr Gln Glu
 130          135          140
Leu Pro Gly Trp Leu Gln Ala Asn Arg Ala Val Lys Pro Thr Gly Ser
 145          150          155          160
Gly Pro Val Gly Leu Ser Met Ala Gly Ser Ala Ala Leu Asn Leu Ala
 165          170          175
Thr Trp His Pro Glu Gln Phe Ile Tyr Ala Gly Ser Met Ser Gly Phe
 180          185          190
Leu Asn Pro Ser Glu Gly Trp Trp Pro Phe Leu Ile Asn Ile Ser Met
 195          200          205
Gly Asp Ala Gly Gly Phe Lys Ala Asp Asp Met Trp Gly Lys Thr Glu
 210          215          220
Gly Ile Pro Thr Ala Val Gly Gln Arg Asn Asp Pro Met Leu Asn Ile
 225          230          235          240
Pro Thr Leu Val Ala Asn Asn Thr Arg Ile Trp Val Tyr Cys Gly Asn
 245          250          255
Gly Gln Pro Thr Glu Leu Gly Gly Gly Asp Leu Pro Ala Thr Phe Leu
 260          265          270
Glu Gly Leu Thr Ile Arg Thr Asn Glu Thr Phe Arg Asp Asn Tyr Ile
 275          280          285
Ala Ala Gly Gly His Asn Gly Val Phe Asn Phe Pro Ala Asn Gly Thr
 290          295          300
His Asn Trp Ala Tyr Trp Gly Arg Glu Leu Gln Ala Met Lys Pro Asp
 305          310          315          320
Leu Gln Ala His Leu Leu

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325

<210> 44  
 <211> 161  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 44

Ser	Gly	Trp	Asp	Ile	Asn	Thr	Ala	Ala	Phe	Glu	Trp	Tyr	Val	Asp	Ser
1				5					10					15	
Gly	Leu	Ala	Val	Ile	Met	Pro	Val	Gly	Gly	Gln	Ser	Ser	Phe	Tyr	Ser
			20					25					30		
Asp	Trp	Tyr	Ser	Pro	Ala	Cys	Gly	Lys	Ala	Gly	Cys	Gln	Thr	Tyr	Lys
		35					40					45			
Trp	Glu	Thr	Phe	Leu	Thr	Gln	Glu	Leu	Pro	Ala	Tyr	Leu	Ala	Ala	Asn
	50					55					60				
Lys	Gly	Val	Asp	Pro	Asn	Arg	Asn	Ala	Ala	Val	Gly	Leu	Ser	Met	Ala
65					70					75					80
Gly	Ser	Ala	Ala	Leu	Thr	Leu	Ala	Ile	Tyr	His	Pro	Gln	Gln	Phe	Gln
				85					90					95	
Tyr	Ala	Gly	Ser	Leu	Ser	Gly	Tyr	Leu	Asn	Pro	Ser	Glu	Gly	Trp	Trp
			100					105					110		
Pro	Met	Leu	Ile	Asn	Ile	Ser	Met	Gly	Asp	Ala	Gly	Gly	Tyr	Lys	Ala
		115					120					125			
Asn	Asp	Met	Trp	Gly	Pro	Pro	Lys	Asp	Pro	Ser	Ser	Ala	Trp	Lys	Arg
	130					135					140				
Asn	Asp	Pro	Met	Val	Asn	Ile	Gly	Lys	Leu	Val	Ala	Asn	Asn	Thr	Pro
145					150					155					160
Leu															

<210> 45  
 <211> 334  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 45

Met	Lys	Phe	Thr	Glu	Lys	Trp	Arg	Gly	Ser	Ala	Lys	Ala	Ala	Met	His
1				5					10					15	
Arg	Val	Gly	Val	Ala	Asp	Met	Ala	Ala	Val	Ala	Leu	Pro	Gly	Leu	Ile
			20					25					30		
Gly	Phe	Ala	Gly	Gly	Ser	Ala	Thr	Ala	Gly	Ala	Phe	Ser	Arg	Pro	Gly
		35					40					45			
Leu	Pro	Val	Glu	Tyr	Leu	Asp	Val	Phe	Ser	Pro	Ser	Met	Gly	Arg	Asp
	50					55					60				
Ile	Arg	Val	Gln	Phe	Gln	Gly	Gly	Gly	Thr	His	Ala	Val	Tyr	Leu	Leu
65					70					75					80
Asp	Gly	Leu	Arg	Ala	Gln	Asp	Asp	Tyr	Asn	Gly	Trp	Asp	Ile	Asn	Thr
				85					90					95	
Pro	Ala	Phe	Glu	Trp	Phe	Tyr	Glu	Ser	Gly	Leu	Ser	Thr	Ile	Met	Pro
			100					105					110		
Val	Gly	Gly	Gln	Ser	Ser	Phe	Tyr	Ser	Asp	Trp	Tyr	Gln	Pro	Ser	Arg
		115						120				125			
Gly	Asn	Gly	Gln	Asn	Tyr	Thr	Tyr	Lys	Trp	Glu	Thr	Phe	Leu	Thr	Gln
	130					135					140				
Glu	Leu	Pro	Thr	Trp	Leu	Glu	Ala	Asn	Arg	Gly	Val	Ser	Arg	Thr	Gly
145					150					155					160

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Asn Ala Phe Val Gly Leu Ser Met Ala Gly Ser Ala Ala Leu Thr Tyr
      165      170      175
Ala Ile His His Pro Gln Gln Phe Ile Tyr Ala Ser Ser Leu Ser Gly
      180      185      190
Phe Leu Asn Pro Ser Glu Gly Trp Trp Pro Met Leu Ile Gly Leu Ala
      195      200      205
Met Asn Asp Ala Gly Gly Phe Asn Ala Glu Ser Met Trp Gly Pro Ser
      210      215      220
Ser Asp Pro Ala Trp Lys Arg Asn Asp Pro Met Val Asn Ile Asn Gln
      225      230      235      240
Leu Val Ala Asn Asn Thr Arg Ile Trp Ile Tyr Cys Gly Thr Gly Thr
      245      250      255
Pro Ser Glu Leu Asp Thr Gly Thr Pro Gly Gln Asn Leu Met Ala Ala
      260      265      270
Gln Phe Leu Glu Gly Phe Thr Leu Arg Thr Asn Ile Ala Phe Arg Asp
      275      280      285
Asn Tyr Ile Ala Ala Gly Gly Thr Asn Gly Val Phe Asn Phe Pro Ala
      290      295      300
Ser Gly Thr His Ser Trp Gly Tyr Trp Gly Gln Gln Leu Gln Gln Met
      305      310      315      320
Lys Pro Asp Ile Gln Arg Val Leu Gly Ala Gln Ala Thr Ala
      325      330

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<210> 46
<211> 795
<212> DNA
<213> Mycobacterium vaccae

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<400> 46
ctgccgcggg tttgccatct cttgggtcct gggtcgggag gccatgttct gggtaacgat      60
ccggtaccgt ccggcgatgt gaccaacatg cgaacagcga caacgaagct aggagcggcg      120
ctcggcgag cagcattggt ggccgccacg gggatggtca gcgcggcgac ggcgaacgcc      180
caggaagggc accaggtccg ttacacgctc acctcggccg gcgcttacga gttcgacctg      240
ttctatctga ccagcgagcc gccgagcatg caggcggtca acgccgacgc gtatgcgttc      300
gccaaagcggg agaaggtcag cctcgcccg ggtgtgccgt gggctctcga aaccacgatg      360
gccgaccoga actgggcgat ccttcaggtc agcagcacca cccgcggtgg gcaggccgcc      420
ccgaacgcgc actgcgacat cgccgtcgat ggccaggagg tgctcagcca gcacgacgac      480
ccctacaacg tgcgggtgcca gctcggtcag tggtagtca cctcgccgag agtccggcca      540
gcgcccggcg cagcggctcg cgggtgcagca ccccgaggcg ctgggtcgcg cgggtcagcg      600
cgacgtaaag atcgctggcc ccgcgcggcc cctcggcgag gatctgctcc gggtagacca      660
ccagcacggc gtctaactcc agacccttgg tctgcgtggg tgccaccgcg cccgggacac      720
cgggcggggc gatcaccacg ctggtgccct cccggtccgc ctccgcacgc acgaaatcgt      780
cgatggcacc ggcga                                     795

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<210> 47
<211> 142
<212> PRT
<213> Mycobacterium vaccae

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<400> 47
Met Arg Thr Ala Thr Thr Lys Leu Gly Ala Ala Leu Gly Ala Ala Ala
  1           5           10           15
Leu Val Ala Ala Thr Gly Met Val Ser Ala Ala Thr Ala Asn Ala Gln
      20           25           30
Glu Gly His Gln Val Arg Tyr Thr Leu Thr Ser Ala Gly Ala Tyr Glu
      35           40           45
Phe Asp Leu Phe Tyr Leu Thr Thr Gln Pro Pro Ser Met Gln Ala Phe

```

50	55	60
Asn Ala Asp Ala Tyr Ala Phe Ala Lys Arg Glu Lys Val Ser Leu Ala		
65	70	75
Pro Gly Val Pro Trp Val Phe Glu Thr Thr Met Ala Asp Pro Asn Trp		
	85	90
Ala Ile Leu Gln Val Ser Ser Thr Thr Arg Gly Gly Gln Ala Ala Pro		
	100	105
Asn Ala His Cys Asp Ile Ala Val Asp Gly Gln Glu Val Leu Ser Gln		
	115	120
His Asp Asp Pro Tyr Asn Val Arg Cys Gln Leu Gly Gln Trp		
	130	140

<210> 48  
 <211> 300  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 48	
gccagtgcgc caacgggtttt catcgatgcc gcacacaacc ccggtggggc ctgcgcttgc	60
cgaaggtcgc gcgacgagtt cgacttcggg tatctcgtcg gcgtcgtctc ggtgatgggg	120
gacaaggacg tggacgggat ccgccaggac ccgggcgtgc cggacggggc cggctctcgca	180
ctgttcgtct cgggcgacaa ctttcgaaag ggtgcggcgc tcaacacgat ccagatcgcc	240
gagctgctgg ccgcccagtt gtaagtgttc cgccgaaatt gcattccacg ccgataatcg	300

<210> 49  
 <211> 563  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 49	
ggatcctcgg ccggtcgaag agtccgcgcc gaggtggatg tgacgctgga cggctacgag	60
ttcagtcggg cctgcgaggg gctgtaccac ttcgcctggg acgagttctg cgactggtat	120
gtcagagctg ccaaagtga actgggtgaa ggtttctcgc acaccacggc cgtgttgagg	180
accgtgctcg atgtgctgct caagcttctg cacccggtca tgccgttcgt caccgaggtg	240
ctgtggaagg ccctgacggg gcggggccggc gcgagcgaac gtctgggaaa tgtggagtca	300
ctggctcgtc cggactggcc cagccccacc ggatacgcgc tggatcaggc tgccgcacaa	360
cggatcgccg acacccagaa gttgatcacc gaggtgcgcc ggttcgcgag cgatcagggt	420
ctggccgacc gccagcgggt gcctgccggg ttgtccggca tcgacaccgc gggctcggac	480
gcccattgtc cggcgggtgc cgcgctggcc ttgcttgacc gaggggtgat agggcttcac	540
cgcgtccgaa tcggtcgagg tgc	563

<210> 50  
 <211> 434  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 50	
gggcccgggc cgaggatgag caagttcgaa gtcgtcaccg ggatggcggt cgcggttttc	60
gccgacgcgc ccatcgacgt cgccgtcgtc gaggtcgggc tcgggtggctg ctgggacgcg	120
acgaacgtgg tgaacgcacc ggtcgcggtc atcaccocga tcgggggtgga ccacaccgac	180
tacctcgggt acacgatcgc cgagatcgcc ggggagaagg ccggaaatca tcaccgcca	240
gccgacgacc tgggtgcccgc cgacaccgtc gccgtgctgg cgcggcaggc tcccagggcc	300
atggaggtgc tgctggccca ggcggtgcgc tcggtatgcg ctgtagcgcg cgaggattcg	360
gagtgccggg tgctgggccc tcaggtcgcc atcggcggca gctgctccgg ttgcaggggc	420
tcgggtggcgt ctac	434

<210> 51



<211> 438  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 51

ggatccact	ccgcgcg	cggcggccag	ctggtacggc	cattccagcg	tgctgatcga	60
ggtcgacggc	taccgcgtgc	tggccgaccc	ggtgtggagc	aacagatgtt	cgccctcacg	120
ggcggtcgga	cgcagcgca	tgcacgacgt	cccggtgccg	ctggaggcgc	ttcccgcgt	180
ggacgcggtg	gtgatcgcca	acgaccacta	cgaccacctc	gacatcgaca	ccatcgtcgc	240
gttggcgcac	acccagcggg	ccccgttcgt	ggtgccgttg	ggcatcggcg	cacacctgcg	300
caagtggggc	gtccccgagg	cgcggtatcg	cgagttggac	tggcacgaag	cccaccgcat	360
cgacgacctg	acgtgtgtct	gcacccccgc	ccggcacttc	tccggccggt	tggtctcccg	420
cgactcgacg	ctgtggggc					438

<210> 52  
 <211> 87  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 52

Ala	Ser	Ala	Pro	Thr	Val	Phe	Ile	Asp	Ala	Ala	His	Asn	Pro	Gly	Gly	
1				5				10						15		
Pro	Cys	Ala	Cys	Arg	Arg	Leu	Arg	Asp	Glu	Phe	Asp	Phe	Arg	Tyr	Leu	
			20					25					30			
Val	Gly	Val	Val	Ser	Val	Met	Gly	Asp	Lys	Asp	Val	Asp	Gly	Ile	Arg	
			35				40					45				
Gln	Asp	Pro	Gly	Val	Pro	Asp	Gly	Arg	Gly	Leu	Ala	Leu	Phe	Val	Ser	
	50					55				60						
Gly	Asp	Asn	Leu	Arg	Lys	Gly	Ala	Ala	Leu	Asn	Thr	Ile	Gln	Ile	Ala	
65					70					75					80	
Glu	Leu	Leu	Ala	Ala	Gln	Leu										
					85											

<210> 53  
 <211> 175  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 53

Gly	Ser	Ser	Ala	Gly	Ser	Arg	Val	Arg	Ala	Glu	Val	Asp	Val	Thr	Leu	
1				5				10						15		
Asp	Gly	Tyr	Glu	Phe	Ser	Arg	Ala	Cys	Glu	Ala	Leu	Tyr	His	Phe	Ala	
			20					25					30			
Trp	Asp	Glu	Phe	Cys	Asp	Trp	Tyr	Val	Glu	Leu	Ala	Lys	Val	Gln	Leu	
			35				40					45				
Gly	Glu	Gly	Phe	Ser	His	Thr	Thr	Ala	Val	Leu	Ala	Thr	Val	Leu	Asp	
	50					55				60						
Val	Leu	Leu	Lys	Leu	Leu	His	Pro	Val	Met	Pro	Phe	Val	Thr	Glu	Val	
65					70					75					80	
Leu	Trp	Lys	Ala	Leu	Thr	Gly	Arg	Ala	Gly	Ala	Ser	Glu	Arg	Leu	Gly	
			85					90					95			
Asn	Val	Glu	Ser	Leu	Val	Val	Ala	Asp	Trp	Pro	Thr	Pro	Thr	Gly	Tyr	
			100					105					110			
Ala	Leu	Asp	Gln	Ala	Ala	Ala	Gln	Arg	Ile	Ala	Asp	Thr	Gln	Lys	Leu	
		115					120					125				
Ile	Thr	Glu	Val	Arg	Arg	Phe	Arg	Ser	Asp	Gln	Gly	Leu	Ala	Asp	Arg	
130						135					140					

Gln Arg Val Pro Ala Arg Leu Ser Gly Ile Asp Thr Ala Gly Leu Asp  
 145 150 155 160  
 Ala His Val Pro Ala Val Arg Ala Leu Ala Trp Leu Asp Arg Gly  
 165 170 175

<210> 54  
 <211> 144  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 54  
 Gly Pro Gly Pro Arg Asn Ser Lys Phe Glu Val Val Thr Gly Met Ala  
 1 5 10 15  
 Phe Ala Ala Phe Ala Asp Ala Pro Ile Asp Val Ala Val Val Glu Val  
 20 25 30  
 Gly Leu Gly Gly Arg Trp Asp Ala Thr Asn Val Val Asn Ala Pro Val  
 35 40 45  
 Ala Val Ile Thr Pro Ile Gly Val Asp His Thr Asp Tyr Leu Gly Asp  
 50 55 60  
 Thr Ile Ala Glu Ile Ala Gly Glu Lys Ala Gly Asn His His Pro Pro  
 65 70 75 80  
 Ala Asp Asp Leu Val Pro Thr Asp Thr Val Ala Val Leu Ala Arg Gln  
 85 90 95  
 Val Pro Glu Ala Asn Glu Val Leu Leu Ala Gln Ala Val Arg Ser Asp  
 100 105 110  
 Ala Ala Val Ala Arg Glu Asp Ser Glu Cys Ala Val Leu Gly Arg Gln  
 115 120 125  
 Val Ala Ile Gly Gly Ser Cys Ser Gly Cys Arg Gly Ser Val Ala Ser  
 130 135 140

<210> 55  
 <211> 145  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 55  
 Asp Pro Thr Pro Ala Pro Ala Ala Ala Ser Trp Tyr Gly His Ser Ser  
 1 5 10 15  
 Val Leu Ile Glu Val Asp Gly Tyr Arg Val Leu Ala Asp Pro Val Trp  
 20 25 30  
 Ser Asn Arg Cys Ser Pro Ser Arg Ala Val Gly Pro Gln Arg Met His  
 35 40 45  
 Asp Val Pro Val Pro Leu Glu Ala Leu Pro Ala Val Asp Ala Val Val  
 50 55 60  
 Ile Ser Asn Asp His Tyr Asp His Leu Asp Ile Asp Thr Ile Val Ala  
 65 70 75 80  
 Leu Ala His Thr Gln Arg Ala Pro Phe Val Val Pro Leu Gly Ile Gly  
 85 90 95  
 Ala His Leu Arg Lys Trp Gly Val Pro Glu Ala Arg Ile Val Glu Leu  
 100 105 110  
 Asp Trp His Glu Ala His Arg Ile Asp Asp Leu Thr Leu Val Cys Thr  
 115 120 125  
 Pro Ala Arg His Phe Ser Gly Arg Leu Phe Ser Arg Asp Ser Thr Leu  
 130 135 140  
 Trp  
 145

<210> 56  
 <211> 10  
 <212> PRT  
 <213> Mycobacterium vaccae  
  
 <220>  
 <221> UNSURE  
 <222> (1)...(1)  
 <223> Residue can be either Gly, Ile, Leu or Val  
  
 <221> UNSURE  
 <222> (2)...(2)  
 <223> Residue can be either Ile, Leu, Gly, or Ala  
  
 <221> UNSURE  
 <222> (5)...(5)  
  
 <221> UNSURE  
 <222> (9)...(9)

<400> 56

Xaa Xaa Ala Pro Xaa Gly Asp Ala Xaa Arg  
 1 5 10

<210> 57  
 <211> 8  
 <212> PRT  
 <213> Mycobacterium vaccae  
  
 <220>  
 <221> UNSURE  
 <222> (7)...(7)  
 <223> Residue can be either Ile or Leu

<400> 57

Pro Glu Ala Glu Ala Asn Xaa Arg  
 1 5

<210> 58  
 <211> 11  
 <212> PRT  
 <213> Mycobacterium vaccae  
  
 <220>  
 <221> UNSURE  
 <222> (4)...(4)  
 <223> Residue can be either Gln or Gly  
  
 <221> UNSURE  
 <222> (5)...(5)  
 <223> Residue can be either Gly or Gln

<400> 58

Thr Ala Asn Xaa Xaa Glu Tyr Tyr Asp Asn Arg  
 1 5 10

<210> 59

<211> 34  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 59  
 Asn Ser Pro Arg Ala Glu Ala Glu Ala Asn Leu Arg Gly Tyr Phe Thr  
 1 5 10 15  
 Ala Asn Pro Ala Glu Tyr Tyr Asp Leu Arg Gly Ile Leu Ala Pro Ile  
 20 25 30  
 Gly Asp

<210> 60  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 60  
 ccggtgggcc cgggctgcgc 20

<210> 61  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 61  
 tggccggcca ccacgtggtg 20

<210> 62  
 <211> 313  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 62  
 gccggtgggc cgggctgcgc cggaatacgc ggcagccaat ccactgggc cggcctcggt 60  
 gcaggaatg tcgcaggacc cggtcgcggt ggcggcctcg aacaatccgg agttgacaac 120  
 gctgtacggc tgactgtcg ggccagctca atccgcaagt aaacctggtg gacaccctca 180  
 acagcggcgt gtacacggtg ttgcaccga ccaacgcggc atttagcaag ctgccggcat 240  
 ccacgatcga cgagctcaag accaattcgt cactgctgac cagcatcctg acctaccacg 300  
 tggcggccgc cca 313

<210> 63  
 <211> 18  
 <212> PRT  
 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (7)...(17)

<400> 63

Glu Pro Ala Gly Pro Leu Pro Xaa Tyr Asn Glu Arg Leu His Thr Leu  
 1 5 10 15  
 Xaa Gln

<210> 64  
 <211> 25  
 <212> PRT  
 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (21)...(21)

<400> 64  
 Gly Leu Asp Asn Glu Leu Ser Leu Val Asp Gly Gln Gly Arg Thr Leu  
 1 5 10 15  
 Thr Val Gln Gln Xaa Asp Thr Phe Leu  
 20 25

<210> 65  
 <211> 26  
 <212> PRT  
 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (3)...(3)

<221> UNSURE  
 <222> (21)...(22)

<221> UNSURE  
 <222> (24)...(24)

<400> 65  
 Asp Pro Xaa Pro Asp Ile Glu Val Glu Phe Ala Arg Gly Thr Gly Ala  
 1 5 10 15  
 Glu Pro Gly Leu Xaa Xaa Val Xaa Asp Ala  
 20 25

<210> 66  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 66  
 accgccctcg agttctcccg gccaggtctg cc

32

<210> 67  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 67  
aagcacgagc tcagtctctt ccacgcggac gt

32

<210> 68  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 68  
catggatcca ttctcccggc cgggtcttcc

30

<210> 69  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 69  
tttgaattct aggcggtggc ctgagc

26

<210> 70  
<211> 161  
<212> PRT  
<213> Mycobacterium vaccae

<400> 70

Ser	Gly	Trp	Asp	Ile	Asn	Thr	Ala	Ala	Phe	Glu	Trp	Tyr	Val	Asp	Ser
1				5					10					15	
Gly	Leu	Ala	Val	Ile	Met	Pro	Val	Gly	Gly	Gln	Ser	Ser	Phe	Tyr	Ser
			20					25					30		
Asp	Trp	Tyr	Ser	Pro	Ala	Cys	Gly	Lys	Ala	Gly	Cys	Gln	Thr	Tyr	Lys
	35					40					45				
Trp	Glu	Thr	Phe	Leu	Thr	Gln	Glu	Leu	Pro	Ala	Tyr	Leu	Ala	Ala	Asn
	50					55				60					
Lys	Gly	Val	Asp	Pro	Asn	Arg	Asn	Ala	Ala	Val	Gly	Leu	Ser	Met	Ala
65					70				75					80	
Gly	Ser	Ala	Ala	Leu	Thr	Leu	Ala	Ile	Tyr	His	Pro	Gln	Gln	Phe	Gln
			85					90					95		
Tyr	Ala	Gly	Ser	Leu	Ser	Gly	Tyr	Leu	Asn	Pro	Ser	Glu	Gly	Trp	Trp
	100							105					110		
Pro	Met	Leu	Ile	Asn	Ile	Ser	Met	Gly	Asp	Ala	Gly	Gly	Tyr	Lys	Ala
	115						120					125			
Asn	Asp	Met	Trp	Gly	Arg	Thr	Glu	Asp	Pro	Ser	Ser	Ala	Trp	Lys	Arg
	130				135					140					
Asn	Asp	Pro	Met	Val	Asn	Ile	Gly	Lys	Leu	Val	Ala	Asn	Asn	Thr	Pro
145					150					155					160
Leu															

<210> 71  
 <211> 33  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 71  
 gagagactcg agaacgcca ggaagggcac cag 33

<210> 72  
 <211> 32  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 72  
 gagagactcg agtgactcac cactgaccga gc 32

<210> 73  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<221> unsure  
 <222> (3)...(3)

<221> unsure  
 <222> (6)...(6)

<221> unsure  
 <222> (9)...(9)

<221> unsure  
 <222> (15)...(15)

<400> 73  
 ggngcngcnc argcngarcc 20

<210> 74  
 <211> 825  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 74  
 ttggatccca ctcccgcgcc ggcggcggcc agctggtacg gccattccag cgtgctgac 60  
 gaggtcgacg gctaccgcgt gctggccgac ccggtgtgga gcaacagatg ttcgccctca 120  
 cgggcggtcg gaccgcagcg catgcacgac gtcccgggtgc cgctggaggc gtttcccgcc 180  
 gtggacgcgg tgggtgatcag ccacgaccac tacgaccacc tcgacatcga caccatcgtc 240  
 gcgttgggcg acacccagcg ggccccgttc gtggtgcggt tgggcatcgg cgcacacctg 300  
 cgcaagtggg gcgtccccga ggcgcggtac gtcgagttgg actggcacga agcccaccgc 360

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atagacgacc tgacgtggt ctgcaccccc gcccggcact tctccggacg gttgttctcc 420
cgcgactcga cgctgtgggc gtcgtgggtg gtcaccggct cgtcgcacaa gccgttcttc 480
ggtggcgaca ccggatacac gaagagcttc gccgagatcg gcgacgagta cggtcggttc 540
gatctgacct tgctgccgat cggggcctac catcccgct tgcgcgacat ccacatgaac 600
cccgaggagg cgggtgcgcgc ccatctggac ctgaccgagg tggacaacag cctgatggtg 660
cccatccact gggcgacatt ccgcctcgcc ccgcatccgt ggtccgagcc cgccgaacgc 720
ctgctgaccg ctgccgacgc cgagcgggta cgctgaccg tgccgattcc cggtcagcgg 780
gtggaccocgg agtcgacgtt cgaccctgg tggcggttct gaacc 825

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<210> 75
<211> 273
<212> PRT
<213> Mycobacterium vaccae

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<400> 75
Leu Asp Pro Thr Pro Ala Pro Ala Ala Ser Trp Tyr Gly His Ser
1          5          10          15
Ser Val Leu Ile Glu Val Asp Gly Tyr Arg Val Leu Ala Asp Pro Val
20          25          30
Trp Ser Asn Arg Cys Ser Pro Ser Arg Ala Val Gly Pro Gln Arg Met
35          40          45
His Asp Val Pro Val Pro Leu Glu Ala Leu Pro Ala Val Asp Ala Val
50          55          60
Val Ile Ser His Asp His Tyr Asp His Leu Asp Ile Asp Thr Ile Val
65          70          75          80
Ala Leu Ala His Thr Gln Arg Ala Pro Phe Val Val Pro Leu Gly Ile
85          90          95
Gly Ala His Leu Arg Lys Trp Gly Val Pro Glu Ala Arg Ile Val Glu
100         105         110
Leu Asp Trp His Glu Ala His Arg Ile Asp Asp Leu Thr Leu Val Cys
115         120         125
Thr Pro Ala Arg His Phe Ser Gly Arg Leu Phe Ser Arg Asp Ser Thr
130         135         140
Leu Trp Ala Ser Trp Val Val Thr Gly Ser Ser His Lys Ala Phe Phe
145         150         155         160
Gly Gly Asp Thr Gly Tyr Thr Lys Ser Phe Ala Glu Ile Gly Asp Glu
165         170         175
Tyr Gly Pro Phe Asp Leu Thr Leu Leu Pro Ile Gly Ala Tyr His Pro
180         185         190
Ala Phe Ala Asp Ile His Met Asn Pro Glu Glu Ala Val Arg Ala His
195         200         205
Leu Asp Leu Thr Glu Val Asp Asn Ser Leu Met Val Pro Ile His Trp
210         215         220
Ala Thr Phe Arg Leu Ala Pro His Pro Trp Ser Glu Pro Ala Glu Arg
225         230         235         240
Leu Leu Thr Ala Ala Asp Ala Glu Arg Val Arg Leu Thr Val Pro Ile
245         250         255
Pro Gly Gln Arg Val Asp Pro Glu Ser Thr Phe Asp Pro Trp Trp Arg
260         265         270
Phe

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<210> 76
<211> 10
<212> PRT
<213> Mycobacterium vaccae

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<400> 76

Ala Lys Thr Ile Ala Tyr Asp Glu Glu Ala  
1 5 10

<210> 77

<211> 337

<212> DNA

<213> Mycobacterium vaccae

<400> 77

gatccctaca	tcctgctggt	cagctccaag	gtgtcgaccg	tcaaggatct	gctcccgtg	60
ctggagaagg	tcatccaggc	cggcaagccg	ctgctgatca	tcgccgagga	cgtcgagggc	120
gagggcctgt	ccacgctggt	ggtcaacaag	atccgcggca	ccttcaagtc	cgtcgccgtc	180
aaggctccgg	gcttcgggtga	ccgccgcaag	gcgatgctgc	aggacatggc	catcctcacc	240
ggtggtcagg	tcgtcagcga	aagagtcggg	ctgtccctgg	agaccgccga	cgtctcgctg	300
ctgggccagg	cccgcgaagt	cgctcgcacc	aaggaca			337

<210> 78

<211> 112

<212> PRT

<213> Mycobacterium vaccae

<400> 78

Asp	Pro	Tyr	Ile	Leu	Leu	Val	Ser	Ser	Lys	Val	Ser	Thr	Val	Lys	Asp
1				5					10					15	
Leu	Leu	Pro	Leu	Leu	Glu	Lys	Val	Ile	Gln	Ala	Gly	Lys	Pro	Leu	Leu
			20					25					30		
Ile	Ile	Ala	Glu	Asp	Val	Glu	Gly	Glu	Ala	Leu	Ser	Thr	Leu	Val	Val
		35				40					45				
Asn	Lys	Ile	Arg	Gly	Thr	Phe	Lys	Ser	Val	Ala	Val	Lys	Ala	Pro	Gly
	50				55					60					
Phe	Gly	Asp	Arg	Arg	Lys	Ala	Met	Leu	Gln	Asp	Met	Ala	Ile	Leu	Thr
65					70				75					80	
Gly	Gly	Gln	Val	Val	Ser	Glu	Arg	Val	Gly	Leu	Ser	Leu	Glu	Thr	Ala
			85					90					95		
Asp	Val	Ser	Leu	Leu	Gly	Gln	Ala	Arg	Lys	Val	Val	Val	Thr	Lys	Asp
			100					105					110		

<210> 79

<211> 360

<212> DNA

<213> Mycobacterium vaccae

<400> 79

ccgtacgaga	agatcggcgc	tgagctggtc	aaagaggctcg	ccaagaagac	cgacgacgtc	60
gcgggacgacg	gcaccaccac	cgccaccgtg	ctcgctcagg	ctctggttcg	cgaaggcctg	120
cgcaacgtcg	cagccggcgc	caaccgcgtc	ggcctcaagc	gtggcatcga	gaaggctgtc	180
gaggctgtca	cccagtcgct	gctgaagtgc	gccaaaggagg	tcgagaccaa	ggagcagatt	240
tctgccaccg	cggcgatctc	cgccggcgac	accagatcg	gcgagctcat	cgccgaggcc	300
atggacaagg	tcggcaacga	gggtgtcatc	accgtcgagg	agtcgaacac	cttcggcctg	360

<210> 80

<211> 120

<212> PRT

<213> Mycobacterium vaccae

<400> 80

Pro Tyr Glu Lys Ile Gly Ala Glu Leu Val Lys Glu Val Ala Lys Lys  
 1 5 10 15  
 Thr Asp Asp Val Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala  
 20 25 30  
 Gln Ala Leu Val Arg Glu Gly Leu Arg Asn Val Ala Ala Gly Ala Asn  
 35 40 45  
 Pro Leu Gly Leu Lys Arg Gly Ile Glu Lys Ala Val Glu Ala Val Thr  
 50 55 60  
 Gln Ser Leu Leu Lys Ser Ala Lys Glu Val Glu Thr Lys Glu Gln Ile  
 65 70 75 80  
 Ser Ala Thr Ala Ala Ile Ser Ala Gly Asp Thr Gln Ile Gly Glu Leu  
 85 90 95  
 Ile Ala Glu Ala Met Asp Lys Val Gly Asn Glu Gly Val Ile Thr Val  
 100 105 110  
 Glu Glu Ser Asn Thr Phe Gly Leu  
 115 120

<210> 81  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 81  
 actgacgctg aggagcgaaa gcgtggggag cgaacaggat tag 43

<210> 82  
 <211> 43  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 82  
 cgacaaggaa cttcgctacc ttaggaccgt catagttacg ggc 43

<210> 83  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 83  
 aaaaaaaaaa aaaaaaaaaa 20

<210> 84  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 84  
ggaaggaagc ggccgctttt tttttttttt t 31

<210> 85  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 85  
gagagagagc ccgggcatgc tsctsctsct s 31

<210> 86  
<211> 238  
<212> DNA  
<213> Mycobacterium vaccae

<400> 86  
ctcgaatgaac cgctcggagc gctcgacctg aagctgcgcc acgtcatgca gttcgagctc 60  
aagcgcattcc agcgggaggt cgggatcacg ttcattctacg tgaccacga ccaggaagag 120  
gcgctcacga tgagtgaccg catcgcggtg atgaacgccg gcaacgtcga acagatcggc 180  
agcccgaccg agatctacga ccgtcccgcg acggtgttcg tcgccagctt catcgaat 238

<210> 87  
<211> 79  
<212> PRT  
<213> Mycobacterium vaccae

<400> 87  
Leu Asp Glu Pro Leu Gly Ala Leu Asp Leu Lys Leu Arg His Val Met  
1 5 10 15  
Gln Phe Glu Leu Lys Arg Ile Gln Arg Glu Val Gly Ile Thr Phe Ile  
20 25 30  
Tyr Val Thr His Asp Gln Glu Glu Ala Leu Thr Met Ser Asp Arg Ile  
35 40 45  
Ala Val Met Asn Ala Gly Asn Val Glu Gln Ile Gly Ser Pro Thr Glu  
50 55 60  
Ile Tyr Asp Arg Pro Ala Thr Val Phe Val Ala Ser Phe Ile Glu  
65 70 75

<210> 88  
<211> 1518  
<212> DNA  
<213> Mycobacterium vaccae

<400> 88  
cactcgccat ggggtgttaca atacccacc agttcctcga agtaaacgaa cagaaccgtg 60  
acatccagct gagaaaatat tcacagcgac gaagcccggc cgatgcctga tggggtcagg 120  
catcagtaca gcgcgctttc ctgcgcggat tctattgtcg agtccggggg gtgacgaagg 180  
aatccattgt cgaaatgtaa attcggttgcg gaatcacttg cataggtccg tcagatccgc 240  
gaagggtttac cccacagcca cgacggctgt ccccgaggag gacctgccct gaccggcaca 300  
cacatcaccg ctgcagaacc tgcagaacag acggcggtatt ccgcggcacc gcccgaaggc 360  
gcgcgggtga tcgagatcga ccatgtcacg aagcgcttcg gcgactacct ggccgtcgcg 420  
gacgcagact tctccatcgc gcccggggag ttcttctcca tgctcggccc gtccgggtgt 480

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gggaagacga ccacgttgcg catgatcgcg ggattcgaga ccccgactga aggggcgatc 540
cgctcgaag gcgcgcgacgt gtcgaggacc ccaccaaca agcgcaacgt caacacgggtg 600
ttccagcact acgcgctggt cccgcacatg acggtctggg acaacgtcgc gtacggcccgc 660
cgagcaaga aactcggcaa aggcgaggtc cgcaagcgcg tcgacgagct gctggagatc 720
gtccggctga ccgaatttgc cgagcgagg cccgcccagc tgtccggcgg gcagcagcag 780
cgggtggcgt tggcccgggc actggtgaac taccacgagc cgctgctgct cgatgaaccg 840
ctcggagcgc tcgacctgaa gctgcgccac gtcatgcagt tcgagctcaa gcgcatccag 900
cgggaggtcg ggatcacgtt catctacgtg acccacgacc aggaagaggc gctcacgatg 960
agtgaccgca tcgcggtgat gaacgccggc aacgtcgaac agatcggcag cccgaccgag 1020
atctacgacc gtcccgcgac ggtgttcgtc gccagcttca tcggacaggc caacctctgg 1080
gcgggcccgt gcaccggccg ctccaaccgc gattacgtcg agatcgacgt tctcggctcg 1140
acgtgaagg cacgcccggg cgagaccacg atcgagcccg gcgggcacgc caccctgatg 1200
gtgcgtccgg aacgcatccg ggtcaccgcc ggctcccagg acgcccgcac cggtgacgtc 1260
gctgcgtgc gtgccaccgt caccgacctg accttccaag gtccggtggt gcggctctcg 1320
ctggccgctc cggacgactc gaccgtgatc gccacgtcg gccccgagca ggatctgccg 1380
ctgctgcgcc ccggcgacga cgtgtacgtc agctgggcac cggaagcctc cctggtgctt 1440
cccggcgacg acatccccac caccgaggac ctogaagaga tgctcgacga ctctgagtc 1500
acgcttcccg attgcoga 1518

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<210> 89
<211> 376
<212> PRT
<213> Mycobacterium vaccae

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<400> 89

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Val Ile Glu Ile Asp His Val Thr Lys Arg Phe Gly Asp Tyr Leu Ala
 1             5             10             15
Val Ala Asp Ala Asp Phe Ser Ile Ala Pro Gly Glu Phe Phe Ser Met
 20             25             30
Leu Gly Pro Ser Gly Cys Gly Lys Thr Thr Thr Leu Arg Met Ile Ala
 35             40             45
Gly Phe Glu Thr Pro Thr Glu Gly Ala Ile Arg Leu Glu Gly Ala Asp
 50             55             60
Val Ser Arg Thr Pro Pro Asn Lys Arg Asn Val Asn Thr Val Phe Gln
 65             70             75             80
His Tyr Ala Leu Phe Pro His Met Thr Val Trp Asp Asn Val Ala Tyr
 85             90             95
Gly Pro Arg Ser Lys Lys Leu Gly Lys Gly Glu Val Arg Lys Arg Val
 100            105            110
Asp Glu Leu Leu Glu Ile Val Arg Leu Thr Glu Phe Ala Glu Arg Arg
 115            120            125
Pro Ala Gln Leu Ser Gly Gly Gln Gln Gln Arg Val Ala Leu Ala Arg
 130            135            140
Ala Leu Val Asn Tyr Pro Ser Ala Leu Leu Leu Asp Glu Pro Leu Gly
 145            150            155            160
Ala Leu Asp Leu Lys Leu Arg His Val Met Gln Phe Glu Leu Lys Arg
 165            170            175
Ile Gln Arg Glu Val Gly Ile Thr Phe Ile Tyr Val Thr His Asp Gln
 180            185            190
Glu Glu Ala Leu Thr Met Ser Asp Arg Ile Ala Val Met Asn Ala Gly
 195            200            205
Asn Val Glu Gln Ile Gly Ser Pro Thr Glu Ile Tyr Asp Arg Pro Ala
 210            215            220
Thr Val Phe Val Ala Ser Phe Ile Gly Gln Ala Asn Leu Trp Ala Gly
 225            230            235            240
Arg Cys Thr Gly Arg Ser Asn Arg Asp Tyr Val Glu Ile Asp Val Leu
 245            250            255

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Gly Ser Thr Leu Lys Ala Arg Pro Gly Glu Thr Thr Ile Glu Pro Gly  
 260 265 270  
 Gly His Ala Thr Leu Met Val Arg Pro Glu Arg Ile Arg Val Thr Pro  
 275 280 285  
 Gly Ser Gln Asp Ala Pro Thr Gly Asp Val Ala Cys Val Arg Ala Thr  
 290 295 300  
 Val Thr Asp Leu Thr Phe Gln Gly Pro Val Val Arg Leu Ser Leu Ala  
 305 310 315 320  
 Ala Pro Asp Asp Ser Thr Val Ile Ala His Val Gly Pro Glu Gln Asp  
 325 330 335  
 Leu Pro Leu Leu Arg Pro Gly Asp Asp Val Tyr Val Ser Trp Ala Pro  
 340 345 350  
 Glu Ala Ser Leu Val Leu Pro Gly Asp Asp Ile Pro Thr Thr Glu Asp  
 355 360 365  
 Leu Glu Glu Met Leu Asp Asp Ser  
 370 375

<210> 90  
 <211> 33  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 90  
 gagagactcg aggtgatcga gatcgaccat gtc 33

<210> 91  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Made in a lab

<400> 91  
 agagactcga gcaatcggga agcgtgactc a 31

<210> 92  
 <211> 323  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 92  
 gtcgactaca aagaagactt caacgacaac gagcagtggg tcgccaaggt caaggagccg 60  
 ttgtcgcgca agcaggacat aggcgccgac ctggtgatcc ccaccgagtt catggcccg 120  
 cgcgtcaagg gctctgggatg gctcaatgag atcagcgaag ccggcgtgcc caatcgcaag 180  
 aatctgcgtc aggacctgtt ggactcgagc atcgacgagg gccgcaagtt caccgcgccg 240  
 tacatgaccg gcatggctcg tctcgcttac aacaaggcag ccaccggacg cgatatccgc 300  
 accatcgacg acctctggga tcc 323

<210> 93  
 <211> 1341  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 93

ccccaccccc	ttccctggag	ccgacgaaag	gcacccgcac	atgtcccggtg	acatcgatcc	60
ccacctgctg	gcccgaatga	ccgcacgccc	caccttgctg	cgccgcttca	tcggcggtgg	120
cgccgcggcc	gcccggggcc	tgacctcctg	ttcgtcgttc	ctggcgggct	gcgggtccga	180
cagtgggacc	tcgagcacca	cgtcacagga	cagcgggccc	gccagcggcg	ccctgcgcgt	240
ctccaactgg	ccgctctata	tggccgacgg	tttcatcgca	gcgttccaga	ccgcctcggg	300
catcacggtc	gactacaaag	aagacttcaa	cgacaacgag	cagtgggttcg	ccaaggtcaa	360
ggagccggtg	tcgcgcaagc	aggacatagg	cgccgacctg	gtgatcccca	ccgagttcat	420
ggccgcgcgc	gtcaagggcc	tgggatggct	caatgagatc	agcgaagccg	gcgtgccccaa	480
tcgcaagaat	ctgcgtcagg	acctgttgga	ctcgagcatc	gacgagggcc	gcaagttcac	540
cgcgcggtac	atgaccggca	tggtcgggtct	cgccctacaac	aaggcagcca	ccggacgcga	600
tatccgcacc	atcgacgacc	tctgggatcc	cgcggttcaag	ggccgcgtca	gtctgtttctc	660
cgacgtccag	gacggcctcg	gcatgatcat	gctctcgcag	ggcaactcgc	cggagaatcc	720
gaccaccgag	tccattcagc	aggcggtcga	tctggtccgc	gaacagaacg	acaggggggtc	780
agatccgtcg	cttcaccggc	aacgactacg	ccgacgacct	ggccgcagaa	acatcgccat	840
cgcgcaggcg	tactccggtg	acgtcgtgca	gctgcaggcg	gacaaccccg	atctgcagtt	900
catcgttccc	gaatccggcg	gcgactgggt	cgtcgacacg	atggtgatcc	cgtacaccac	960
gcagaaccag	aaggccggcg	aggcgtggat	cgactacatc	tacgaccgag	ccaactacgc	1020
caagctgggtc	cggttcagcc	agttcgtgcc	cgactctcgc	gacatgaccg	acgaactcgc	1080
caaggctgat	cctgcatcgg	cggagaaccc	gctgatcaac	ccgtcggccg	agggtgcaggc	1140
gaacctgaag	tcgtggggcg	cactgaccga	cgagcagacg	caggagttca	acactgcgta	1200
cgccgcgcgtc	accggcgggt	gacgcgggtg	tagtgccgat	gcgaggggca	taaattggccc	1260
tgcggacgcg	aggagcataa	atggccgggtg	tcgccaccag	cagccgtcag	cggacaagggt	1320
cgctccgtat	ctgatgggtcc	t				1341

<210> 94

<211> 393

<212> PRT

<213> Mycobacterium vaccae

<400> 94

Met	Ser	Arg	Asp	Ile	Asp	Pro	His	Leu	Leu	Ala	Arg	Met	Thr	Ala	Arg
1				5					10					15	
Arg	Thr	Leu	Arg	Arg	Arg	Phe	Ile	Gly	Gly	Ala	Ala	Ala	Ala	Ala	Ala
		20						25					30		
Gly	Leu	Thr	Leu	Gly	Ser	Ser	Phe	Leu	Ala	Ala	Cys	Gly	Ser	Asp	Ser
		35					40					45			
Gly	Thr	Ser	Ser	Thr	Thr	Ser	Gln	Asp	Ser	Gly	Pro	Ala	Ser	Gly	Ala
	50					55				60					
Leu	Arg	Val	Ser	Asn	Trp	Pro	Leu	Tyr	Met	Ala	Asp	Gly	Phe	Ile	Ala
65				70						75				80	
Ala	Phe	Gln	Thr	Ala	Ser	Gly	Ile	Thr	Val	Asp	Tyr	Lys	Glu	Asp	Phe
			85					90						95	
Asn	Asp	Asn	Glu	Gln	Trp	Phe	Ala	Lys	Val	Lys	Glu	Pro	Leu	Ser	Arg
		100					105					110			
Lys	Gln	Asp	Ile	Gly	Ala	Asp	Leu	Val	Ile	Pro	Thr	Glu	Phe	Met	Ala
	115					120					125				
Ala	Arg	Val	Lys	Gly	Leu	Gly	Trp	Leu	Asn	Glu	Ile	Ser	Glu	Ala	Gly
	130				135					140					
Val	Pro	Asn	Arg	Lys	Asn	Leu	Arg	Gln	Asp	Leu	Leu	Asp	Ser	Ser	Ile
145				150					155					160	
Asp	Glu	Gly	Arg	Lys	Phe	Thr	Ala	Pro	Tyr	Met	Thr	Gly	Met	Val	Gly
			165					170					175		
Leu	Ala	Tyr	Asn	Lys	Ala	Ala	Thr	Gly	Arg	Asp	Ile	Arg	Thr	Ile	Asp
		180					185					190			
Asp	Leu	Trp	Asp	Pro	Ala	Phe	Lys	Gly	Arg	Val	Ser	Leu	Phe	Ser	Asp
	195						200					205			

Val Gln Asp Gly Leu Gly Met Ile Met Leu Ser Gln Gly Asn Ser Pro  
 210 215 220  
 Glu Asn Pro Thr Thr Glu Ser Ile Gln Gln Ala Val Asp Leu Val Arg  
 225 230 235 240  
 Glu Gln Asn Asp Arg Gly Ser Asp Pro Ser Leu His Arg Gln Arg Leu  
 245 250 255  
 Arg Arg Arg Pro Gly Arg Arg Asn Ile Ala Ile Ala Gln Ala Tyr Ser  
 260 265 270  
 Gly Asp Val Val Gln Leu Gln Ala Asp Asn Pro Asp Leu Gln Phe Ile  
 275 280 285  
 Val Pro Glu Ser Gly Gly Asp Trp Phe Val Asp Thr Met Val Ile Pro  
 290 295 300  
 Tyr Thr Thr Gln Asn Gln Lys Ala Ala Glu Ala Trp Ile Asp Tyr Ile  
 305 310 315 320  
 Tyr Asp Arg Ala Asn Tyr Ala Lys Leu Val Ala Phe Thr Gln Phe Val  
 325 330 335  
 Pro Ala Leu Ser Asp Met Thr Asp Glu Leu Ala Lys Val Asp Pro Ala  
 340 345 350  
 Ser Ala Glu Asn Pro Leu Ile Asn Pro Ser Ala Glu Val Gln Ala Asn  
 355 360 365  
 Leu Lys Ser Trp Ala Ala Leu Thr Asp Glu Gln Thr Gln Glu Phe Asn  
 370 375 380  
 Thr Ala Tyr Ala Ala Val Thr Gly Gly  
 385 390

<210> 95  
 <211> 22  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 95  
 atgtcccggtg acatcgatcc cc 22

<210> 96  
 <211> 21  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 96  
 atcggcacta ccaccgcgtc a 21

<210> 97  
 <211> 861  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 97  
 gccggcgctc gcatatctcg cgatcttctt ccgtgggtgcc gttcttctcg ctggcacgca 60  
 cctcggtgtc ggagaccggc ggctcggtgt tcatgccgac gctgacgttc gcctgggact 120  
 tcggcaacta cgtcgacgcg ttcacgatgt accacgagca gatcttccgc tcgttcggct 180  
 acgcgttcgt cgccacgggtg ctgtgcctgt tgcgtggcgtt cccgctggcc tacgtcatcg 240  
 cgttcaaggc cggccgggttc aagaacctga tccgtggggtt ggtgatcctg ccgttcttcg 300  
 tcacgttcct gatccgcacc attgcgtgga agacgatcct ggccgacgaa ggctgggtgg 360  
 tcaccgcgct gggcgccatc gggctgctgc ctgacgaggg ccggctgctg tccaccagct 420  
 gggcggtcat cggcggtctg acctacaact ggatcatctt catgatcctg ccgctgtacg 480  
 tcagcctgga gaagatcgac ccgcgtctgc tggaggcctc ccaggacctc tactcgtcgg 540  
 cgccgcgcag cttcggcaag gtgatcctgc cgatggcgat gcccggggtg ctggccggga 600

```

gcatgctggt gttcatcccg gccgtcggcg acttcatcaa cgccgactat ctcggcagta 660
cccagaccac catgatcggc aacgtgatcc agaagcagtt cctggtcgtc aaggactatc 720
cggcggcggc cgcgctgagt ctggggctga tgttgctgat cctgatcggc gtgctcctct 780
acacacgggc gctgggttcg gaggatctgg tatgaccacc caggcaggcg ccgcactggc 840
caccgccgcc cagcaggatc c 861

```

<210> 98  
 <211> 259  
 <212> PRT  
 <213> Mycobacterium vaccae

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<400> 98
Val Val Pro Phe Phe Ser Leu Ala Arg Thr Ser Leu Ser Glu Thr Gly
1 5 10 15
Gly Ser Val Phe Met Pro Thr Leu Thr Phe Ala Trp Asp Phe Gly Asn
20 25 30
Tyr Val Asp Ala Phe Thr Met Tyr His Glu Gln Ile Phe Arg Ser Phe
35 40 45
Gly Tyr Ala Phe Val Ala Thr Val Leu Cys Leu Leu Ala Phe Pro
50 55 60
Leu Ala Tyr Val Ile Ala Phe Lys Ala Gly Arg Phe Lys Asn Leu Ile
65 70 75 80
Leu Gly Leu Val Ile Leu Pro Phe Phe Val Thr Phe Leu Ile Arg Thr
85 90 95
Ile Ala Trp Thr Ile Leu Ala Asp Glu Gly Trp Val Val Thr Ala Leu
100 105 110
Gly Ala Ile Gly Leu Leu Pro Asp Glu Gly Arg Leu Leu Ser Thr Ser
115 120 125
Trp Ala Val Ile Gly Gly Leu Thr Tyr Asn Trp Ile Ile Phe Met Ile
130 135 140
Leu Pro Leu Tyr Val Ser Leu Glu Lys Ile Asp Pro Arg Leu Leu Glu
145 150 155 160
Ala Ser Gln Asp Leu Tyr Ser Ser Ala Pro Arg Ser Phe Gly Lys Val
165 170 175
Ile Leu Pro Met Ala Met Pro Gly Val Leu Ala Gly Ser Met Leu Val
180 185 190
Phe Ile Pro Ala Val Gly Asp Phe Ile Asn Ala Asp Tyr Leu Gly Ser
195 200 205
Thr Gln Thr Thr Met Ile Gly Asn Val Ile Gln Lys Gln Phe Leu Val
210 215 220
Val Lys Asp Tyr Pro Ala Ala Ala Ala Leu Ser Leu Gly Leu Met Leu
225 230 235 240
Leu Ile Leu Ile Gly Val Leu Leu Tyr Thr Arg Ala Leu Gly Ser Glu
245 250 255
Asp Leu Val

```

<210> 99  
 <211> 277  
 <212> DNA  
 <213> Mycobacterium vaccae

```

<400> 99
gtaatctttg ctggagcccg tacgccggta ggcaaactca tgggttcgct caaggacttc 60
aagggcagcg atctcggtgc cgtggcgatc aagggcgccc tggagaaagc cttccccggc 120
gtcgacgacc ctgctcgtct cgtcgagtac gtgatcatgg gccaaagtgt ctccgccggc 180
gccggccaga tgcccggccg ccaggccgcc gtcgccgccg gcatcccggt ggacgtcgcc 240

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tcgctgacga tcaacaagat gtgcctgtcg ggcacgcg

277

<210> 100

<211> 92

<212> PRT

<213> Mycobacterium vaccae

<400> 100

Val	Ile	Phe	Ala	Gly	Ala	Arg	Thr	Pro	Val	Gly	Lys	Leu	Met	Gly	Ser
1				5				10					15		
Leu	Lys	Asp	Phe	Lys	Gly	Ser	Asp	Leu	Gly	Ala	Val	Ala	Ile	Lys	Gly
		20					25					30			
Ala	Leu	Glu	Lys	Ala	Phe	Pro	Gly	Val	Asp	Asp	Pro	Ala	Arg	Leu	Val
		35					40					45			
Glu	Tyr	Val	Ile	Met	Gly	Gln	Val	Leu	Ser	Ala	Gly	Ala	Gly	Gln	Met
	50					55					60				
Pro	Ala	Arg	Gln	Ala	Ala	Val	Ala	Ala	Gly	Ile	Pro	Trp	Asp	Val	Ala
65				70					75					80	
Ser	Leu	Thr	Ile	Asn	Lys	Met	Cys	Leu	Ser	Gly	Ile				
			85					90							

<210> 101

<211> 12

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (1)...(1)

<223> Residue can be either Glu or Pro

<221> UNSURE

<222> (2)...(2)

<223> Residue can be either Pro or Glu

<221> UNSURE

<222> (7)...(7)

<221> UNSURE

<222> (12)...(12)

<400> 101

Xaa	Xaa	Ala	Asp	Arg	Gly	Xaa	Ser	Lys	Tyr	Arg	Xaa
1				5				10			

<210> 102

<211> 24

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (1)...(1)

<400> 102

Xaa	Ile	Asp	Glu	Ser	Leu	Phe	Asp	Ala	Glu	Glu	Lys	Met	Glu	Lys	Ala
1				5				10					15		

Val Ser Val Ala Arg Asp Ser Ala  
20

<210> 103  
<211> 23  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (1)...(2)

<221> UNSURE  
<222> (15)...(15)

<221> UNSURE  
<222> (17)...(17)

<400> 103

Xaa Xaa Ile Ala Pro Ala Thr Ser Gly Thr Leu Ser Glu Phe Xaa Ala  
1 5 10 15  
Xaa Lys Gly Val Thr Met Glu  
20

<210> 104  
<211> 15  
<212> PRT  
<213> Mycobacterium vaccae

<400> 104

Pro Asn Val Pro Asp Ala Phe Ala Val Leu Ala Asp Arg Val Gly  
1 5 10 15

<210> 105  
<211> 9  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (1)...(1)

<400> 105

Xaa Ile Arg Val Gly Val Asn Gly Phe  
1 5

<210> 106  
<211> 485  
<212> DNA  
<213> Mycobacterium vaccae

<400> 106

agcggtctggg	acatcaacac	cgccgccttc	gagtggtacg	tcgactcggg	tctcgcggtg	60
atcatgcccg	tcggcgggca	gtccagcttc	tacagcgact	ggtacagccc	ggcctgcggt	120
aaggccggct	gccagacctt	caagtgggag	acgttcctga	cccaggagct	gccggcctac	180
ctcgccgcc	acaagggggt	cgacccgaac	cgcaacgcgg	ccgtcgggtc	gtccatggcc	240
ggttcggcgg	cgctgacgct	ggcgatctac	caccgcgacg	agttccagta	cgccgggtcg	300

ctgtcgggct	acctgaacc	gtccgagggg	tgggtggccga	tgctgatcaa	catctcgatg	360
ggtgacgcgg	gcggctacaa	ggccaacgac	atgtgggggtc	gcaccgagga	cccgagcagc	420
gcctggaagc	gcaacgaccc	gatggtcaac	atcggcaagc	tggtcgccaa	caacaccccc	480
ctctc						485

```
<210> 107
<211> 501
<212> DNA
<213> Mycobacterium vaccae
```

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<221> unsure
<222> (450)...(450)
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atgccgggtgc	gacgtgcgcg	cagtgcgctt	gcgtccgtga	ccttcgtcgc	ggccgcgtgc	60
gtgggcgctg	agggcaccgc	actggcgggc	acgccggaact	ggagcggggc	ctacacggtg	120
gtgacgttcg	cctccgacaa	actcggcacg	agtgtggccg	cccgccagcc	agaacccgac	180
ttcagcggtc	agtacacctt	cagcacgtcc	tgtgtgggca	cctgcgtggc	caccgcgtcc	240
gacggccccg	cgcgctcgaa	cccgcagatt	ccgcagcccg	cgcgctacac	ctgggacggc	300
aggcagtggt	tgttcaacta	caactggcag	tgggagtgtc	tccgcggcgc	cgacgtcccg	360
cgcgagtacg	ccgccgcgcg	ttcgctgggt	ttctacgcc	cgaccgccga	cgggtcgatg	420
ttcggcacct	ggcgcaccga	natcctggan	ggcctctgca	agggcaccgt	gatcatgccg	480
gtcgcggcct	atccggcgta	g				501

<400> 108

atgaaccagc	cgcgggcccg	ggccgagggc	aacctgcggg	gctacttcac	cgccaacccg	60
gcggagtact	acgacctgcg	gggcatacct	gccccgatcg	gtgacgcgca	gcgcaactgc	120
aacatcaccc	tgctgcgggt	agagctgcag	acggcctacg	acacgttcat	ggccggctga	180

<400> 109

Met	Pro	Val	Arg	Arg	Ala	Arg	Ser	Ala	Leu	Ala	Ser	Val	Thr	Phe	Val
1				5					10					15	
Ala	Ala	Ala	Cys	Val	Gly	Ala	Glu	Gly	Thr	Ala	Leu	Ala	Ala	Thr	Pro
			20					25					30		
Asp	Trp	Ser	Gly	Arg	Tyr	Thr	Val	Val	Thr	Phe	Ala	Ser	Asp	Lys	Leu
		35					40					45			
Gly	Thr	Ser	Val	Ala	Ala	Arg	Gln	Pro	Glu	Pro	Asp	Phe	Ser	Gly	Gln
	50					55					60				
Tyr	Thr	Phe	Ser	Thr	Ser	Cys	Val	Gly	Thr	Cys	Val	Ala	Thr	Ala	Ser
65					70					75				80	
Asp	Gly	Pro	Ala	Pro	Ser	Asn	Pro	Thr	Ile	Pro	Gln	Pro	Ala	Arg	Tyr
				85					90					95	
Thr	Trp	Asp	Gly	Arg	Gln	Trp	Val	Phe	Asn	Tyr	Asn	Trp	Gln	Trp	Glu



```

Met Gln Val Arg Arg Val Leu Gly Ser Val Gly Ala Ala Val Ala Val
 1           5           10           15
Ser Ala Ala Leu Trp Gln Thr Gly Val Ser Ile Pro Thr Ala Ser Ala
 20           25           30
Asp Pro Cys Pro Asp Ile Glu Val Ile Phe Ala Arg Gly Thr Gly Ala
 35           40           45
Glu Pro Gly Leu Gly Trp Val Gly Asp Ala Phe Val Asn Ala Leu Arg
 50           55           60
Pro Lys Val Gly Glu Gln Ser Val Gly Thr Tyr Ala Val Asn Tyr Pro
 65           70           75           80
Ala Gly Phe Asp Phe Asp Lys Ser Ala Pro Met Gly Ala Ala Asp Ala
 85           90           95
Ser Gly Arg Val Gln Trp Met Ala Asp Asn Cys Pro Asp Thr Lys Leu
 100          105          110
Val Leu Gly Gly Met Ser Xaa Gly Ala Gly Val Ile Asp Leu Ile Thr
 115          120          125
Val Asp Pro Arg Pro Leu Gly Arg Phe Thr Pro Thr Pro Met Pro Pro
 130          135          140
Arg Val Ala Asp His Val Ala Ala Val Val Val Phe Gly Asn Pro Leu
 145          150          155          160
Arg Asp Ile Arg Gly Gly Gly
          165

```

```

<210> 113
<211> 1569
<212> DNA
<213> Mycobacterium vaccae

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```

<400> 113
atggccaaga caattgcgta tgacgaagag gcccgccgtg gcctcgagcg gggcctcaac      60
gccctcgagc acgccgtaaa ggtgacgttg gggccgaagg gtcgcaacgt cgtgctggag      120
aagaagtggg ggcgccccac gatcaccaac gatggtgtgt ccatcgccaa ggagatcgag      180
ctggaggacc cgtacgagaa gatcggcgct gagctggtca aagaggtcgc caagaagacc      240
gacgacgtcg cgggcgacgg caccaccacc gccaccgtgc tcgctcaggc tctggttcgc      300
gaaggcctgc gcaacgtcgc agccggcgcg aaccgcgtcg gcctcaagcg tggcatcgag      360
aaggctgtcg aggtgttcac ccagtgcgtg ctgaagtcgg ccaaggaggt cgagaccaag      420
gagcagattt ctgccaccgc ggcgatttcc gccggcgaca cccagatcgg cgagctcatc      480
gccgaggcca tggacaaggt cggcaacgag ggtgtcatca ccgtcgagga gtcgaacacc      540
ttcggcctgc agctcgagct caccgagggt atgcgcttcg acaagggtta catctcgggt      600
tacttcgtga ccgacgcca ggcgaggaa gccgtccttg aggatcccta catcctgctg      660
gtcagctcca aggtgtcgac cgtcaaggat ctgctcccgc tgctggagaa ggtcatccag      720
gccggcaagc cgctgctgat catcgccgag gacgtcgagg gcgaggccct gtccacgctg      780
gtggtcaaca agatccgcgg caccttcaag tccgtcgccg tcaaggctcc gggcttcggg      840
gaccgccgca aggcgatgct gcaggacatg gccatcctca ccggtggtca ggtcgtcagc      900
gaaagagtcg ggctgtccct ggagaccgcc gacgtctcgc tgctgggcca ggcccgcaag      960
gtcgctcgta ccaaggacga gaccaccatc gtcgaggggt cgggcgattc cgatgccatc     1020
gccggcgggg tggtcagat ccgcgccgag atcgagaaca gcgactccga ctacgaccgc     1080
gagaagctgc aggagcgctt ggccaagctg gccggcggtg ttgcggtgat caaggccgga     1140
gctgccaccg aggtggagct caaggagcgc aagcaccgca tcgaggacgc cgtccgcaac     1200
gcgaaggctg ccgtcgaaga gggcatcgtc gccggtggcg gcgtggctct gctgcagtcg     1260
gctcctgcgc tggacgacct cggcctgacg ggcgacgagg ccaccggtgc caacatcgtc     1320
cgcgtggcgc agtcggctcc gctcaagcac atcgcttca acggcggcct ggagcccggc     1380
gtcgttgccg gtaaggtgtc caactgccc gccggtcacg gcctcaacgc cgcgaccggt     1440
gagtacgagg acctgtcaa ggccggcgtc gccgaccggc tgaaggtcac ccgctcggcg     1500
ctgcagaacg cggcgctccat cgcggctctg ttctcacca ccgaggccgt cgtcgccgac     1560
aagccggag
          1569

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<210> 114  
 <211> 523  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 114

Met	Ala	Lys	Thr	Ile	Ala	Tyr	Asp	Glu	Glu	Ala	Arg	Arg	Gly	Leu	Glu
1				5				10						15	
Arg	Gly	Leu	Asn	Ala	Leu	Ala	Asp	Ala	Val	Lys	Val	Thr	Leu	Gly	Pro
		20					25						30		
Lys	Gly	Arg	Asn	Val	Val	Leu	Glu	Lys	Lys	Trp	Gly	Ala	Pro	Thr	Ile
	35					40					45				
Thr	Asn	Asp	Gly	Val	Ser	Ile	Ala	Lys	Glu	Ile	Glu	Leu	Glu	Asp	Pro
	50				55					60					
Tyr	Glu	Lys	Ile	Gly	Ala	Glu	Leu	Val	Lys	Glu	Val	Ala	Lys	Lys	Thr
65			70						75						80
Asp	Asp	Val	Ala	Gly	Asp	Gly	Thr	Thr	Thr	Ala	Thr	Val	Leu	Ala	Gln
			85					90					95		
Ala	Leu	Val	Arg	Glu	Gly	Leu	Arg	Asn	Val	Ala	Ala	Gly	Ala	Asn	Pro
		100					105					110			
Leu	Gly	Leu	Lys	Arg	Gly	Ile	Glu	Lys	Ala	Val	Glu	Ala	Val	Thr	Gln
	115					120					125				
Ser	Leu	Leu	Lys	Ser	Ala	Lys	Glu	Val	Glu	Thr	Lys	Glu	Gln	Ile	Ser
	130					135				140					
Ala	Thr	Ala	Ala	Ile	Ser	Ala	Gly	Asp	Thr	Gln	Ile	Gly	Glu	Leu	Ile
145			150					155							160
Ala	Glu	Ala	Met	Asp	Lys	Val	Gly	Asn	Glu	Gly	Val	Ile	Thr	Val	Glu
			165				170						175		
Glu	Ser	Asn	Thr	Phe	Gly	Leu	Gln	Leu	Glu	Leu	Thr	Glu	Gly	Met	Arg
		180					185					190			
Phe	Asp	Lys	Gly	Tyr	Ile	Ser	Gly	Tyr	Phe	Val	Thr	Asp	Ala	Glu	Arg
	195					200					205				
Gln	Glu	Ala	Val	Leu	Glu	Asp	Pro	Tyr	Ile	Leu	Leu	Val	Ser	Ser	Lys
	210					215				220					
Val	Ser	Thr	Val	Lys	Asp	Leu	Leu	Pro	Leu	Leu	Glu	Lys	Val	Ile	Gln
225			230					235							240
Ala	Gly	Lys	Pro	Leu	Leu	Ile	Ile	Ala	Glu	Asp	Val	Glu	Gly	Glu	Ala
			245				250						255		
Leu	Ser	Thr	Leu	Val	Val	Asn	Lys	Ile	Arg	Gly	Thr	Phe	Lys	Ser	Val
		260					265					270			
Ala	Val	Lys	Ala	Pro	Gly	Phe	Gly	Asp	Arg	Arg	Lys	Ala	Met	Leu	Gln
	275					280					285				
Asp	Met	Ala	Ile	Leu	Thr	Gly	Gly	Gln	Val	Val	Ser	Glu	Arg	Val	Gly
	290				295						300				
Leu	Ser	Leu	Glu	Thr	Ala	Asp	Val	Ser	Leu	Leu	Gly	Gln	Ala	Arg	Lys
305				310					315						320
Val	Val	Val	Thr	Lys	Asp	Glu	Thr	Thr	Ile	Val	Glu	Gly	Ser	Gly	Asp
			325					330					335		
Ser	Asp	Ala	Ile	Ala	Gly	Arg	Val	Ala	Gln	Ile	Arg	Ala	Glu	Ile	Glu
		340					345					350			
Asn	Ser	Asp	Ser	Asp	Tyr	Asp	Arg	Glu	Lys	Leu	Gln	Glu	Arg	Leu	Ala
		355				360					365				
Lys	Leu	Ala	Gly	Gly	Val	Ala	Val	Ile	Lys	Ala	Gly	Ala	Ala	Thr	Glu
	370					375					380				
Val	Glu	Leu	Lys	Glu	Arg	Lys	His	Arg	Ile	Glu	Asp	Ala	Val	Arg	Asn
385				390						395					400
Ala	Lys	Ala	Ala	Val	Glu	Glu	Gly	Ile	Val	Ala	Gly	Gly	Gly	Val	Ala



<210> 117  
 <211> 215  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 117

```

Met Ala Lys Thr Ile Ala Tyr Asp Glu Glu Ala Arg Arg Gly Leu Glu
 1           5           10           15
Arg Gly Leu Asn Ala Leu Ala Asp Ala Val Lys Val Thr Leu Gly Pro
          20           25           30
Lys Gly Arg Asn Val Val Leu Glu Lys Lys Trp Gly Ala Pro Thr Ile
          35           40           45
Thr Asn Asp Gly Val Ser Ile Ala Lys Glu Ile Glu Leu Glu Asp Pro
          50           55           60
Tyr Glu Lys Ile Gly Ala Glu Leu Val Lys Glu Val Ala Lys Lys Thr
65           70           75           80
Asp Asp Val Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala Gln
          85           90           95
Ala Leu Val Arg Glu Gly Leu Arg Asn Val Ala Ala Gly Ala Asn Pro
          100          105          110
Leu Gly Leu Lys Arg Gly Ile Glu Lys Ala Val Glu Ala Val Thr Gln
          115          120          125
Ser Leu Leu Lys Ser Ala Lys Glu Val Glu Thr Lys Glu Gln Ile Ser
130           135           140
Ala Thr Ala Ala Ile Ser Ala Gly Asp Thr Gln Ile Gly Glu Leu Ile
145           150           155           160
Ala Glu Ala Met Asp Lys Val Gly Asn Glu Gly Val Ile Thr Val Glu
          165          170          175
Glu Ser Asn Thr Phe Gly Leu Gln Leu Glu Leu Thr Glu Gly Met Arg
          180          185          190
Phe Asp Lys Gly Tyr Ile Ser Gly Tyr Phe Val Thr Asp Ala Glu Arg
          195          200          205
Gln Glu Ala Val Leu Glu Asp
210           215

```

<210> 118  
 <211> 309  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 118

```

Asp Pro Tyr Ile Leu Leu Val Ser Ser Lys Val Ser Thr Val Lys Asp
 1           5           10           15
Leu Leu Pro Leu Leu Glu Lys Val Ile Gln Ala Gly Lys Pro Leu Leu
          20           25           30
Ile Ile Ala Glu Asp Val Glu Gly Glu Ala Leu Ser Thr Leu Val Val
          35           40           45
Asn Lys Ile Arg Gly Thr Phe Lys Ser Val Ala Val Lys Ala Pro Gly
          50           55           60
Phe Gly Asp Arg Arg Lys Ala Met Leu Gln Asp Met Ala Ile Leu Thr
65           70           75           80
Gly Gly Gln Val Val Ser Glu Arg Val Gly Leu Ser Leu Glu Thr Ala
          85           90           95
Asp Val Ser Leu Leu Gly Gln Ala Arg Lys Val Val Val Thr Lys Asp
          100          105          110
Glu Thr Thr Ile Val Glu Gly Ser Gly Asp Ser Asp Ala Ile Ala Gly
115           120           125

```



Arg Val Ala Gln Ile Arg Ala Glu Ile Glu Asn Ser Asp Ser Asp Tyr  
 130 135 140  
 Asp Arg Glu Lys Leu Gln Glu Arg Leu Ala Lys Leu Ala Gly Gly Val  
 145 150 155 160  
 Ala Val Ile Lys Ala Gly Ala Ala Thr Glu Val Glu Leu Lys Glu Arg  
 165 170 175  
 Lys His Arg Ile Glu Asp Ala Val Arg Asn Ala Lys Ala Ala Val Glu  
 180 185 190  
 Glu Gly Ile Val Ala Gly Gly Gly Val Ala Leu Leu Gln Ser Ala Pro  
 195 200 205  
 Ala Leu Asp Asp Leu Gly Leu Thr Gly Asp Glu Ala Thr Gly Ala Asn  
 210 215 220  
 Ile Val Arg Val Ala Leu Ser Ala Pro Leu Lys Gln Ile Ala Phe Asn  
 225 230 235 240  
 Gly Gly Leu Glu Pro Gly Val Val Ala Glu Lys Val Ser Asn Leu Pro  
 245 250 255  
 Ala Gly His Gly Leu Asn Ala Ala Thr Gly Glu Tyr Glu Asp Leu Leu  
 260 265 270  
 Lys Ala Gly Val Ala Asp Pro Val Lys Val Thr Arg Ser Ala Leu Gln  
 275 280 285  
 Asn Ala Ala Ser Ile Ala Ala Leu Phe Leu Thr Thr Glu Ala Val Val  
 290 295 300  
 Ala Asp Lys Pro Glu  
 305

<210> 119  
 <211> 162  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 119  
 ctcgtacagg cgacggagat ctccgacgac gccacgtcgg tacggttggt cgccaccctg 60  
 ttccggcgtcg tgttggtgac gttggtgctg tccgggctca acgccaccct catccagggc 120  
 gcaccagaag acagctggcg caggcggatt ccgtcgatct tc 162

<210> 120  
 <211> 1366  
 <212> DNA  
 <213> Mycobacterium vaccae

<220>  
 <221> unsure  
 <222> (955)...(955)

<221> unsure  
 <222> (973)...(973)

<400> 120  
 gatgagcagc gtgctgaact cgacctggtt ggccctgggccc gtcgcggtcg cggtcggggtt 60  
 cccggtgctg ctggtcgtgc tgaccgaggt gcacaacgcg ttgcgtcggc gcggcagcgc 120  
 gctggcccgc ccggtgcaac tctgctgac ctacatcctg ccgctgggcg cgttgctgct 180  
 cctgctggta caggcgatgg agatctccga cgacgccacg tcggtacggt tggtcgccac 240  
 cctgttcggc gtcgtgttgt tgacgttggg gctgtccggg ctcaacgccca cctcatcca 300  
 gggcgcacca gaagacagct ggcgcaggcg gattccgtcg atcttccctg acgtcgcgcg 360  
 cttcgcgctg atcgcggtcg gtatcacctg gatcatggcc tatgtctggg gcgcgaacgt 420  
 ggggggcctg ttcaccgcac tgggcgtcac ttccatcgtt cttggcctgg ctctgcagaa 480  
 ttccgtcggg cagatcatct cgggtctgct gctgctgttc gagcaaccgt tccggctcgg 540

```

cgactggatc accgtcccca ccgcgggcggg ccggccggtcc gccacggcc gcgtggtgga 600
agtcaactgg cgtgcaacac atatcgacac cggcggcaac ctgctggtaa tgcccaacgc 660
cgaactcgcc ggcgcgtcgt tcaccaatta cagccggccc gtgggagagc accggctgac 720
cgtcgtcacc accttcaacg ccgcggaacac ccccgatgat gtctgcgaga tgctgtcgtc 780
ggtcgcggcg tcgctgcccg aactgcgcac cgacggacag atcgccacgc tctatctcgg 840
tgcgggccgaa tacgagaagt cgatcccgtt gcacacaccc gcggtggacg actcggtcag 900
gagcacgtac ctgcgatggg tctggtacgc cgcgcgccgg caggaacttc gcctnaacgg 960
cgtcgccgac ganttcgaca cgccggaacg gatcgccctcg gccatgcggg ctgtggcgtc 1020
cacactgctc ttggcagacg acgaacagca ggagatcgcc gacgtggtgc gtctggtccg 1080
ttacggcaac ggggaacgcc tccagcagcc gggtcaggta ccgaccggga tgaggttcat 1140
cgtagacggc aggggtgagtc tgtccgtgat cgatcaggac ggcgacgtga tcccggcgcg 1200
gggtgctcgag cgtggcgact tcctggggca gaccacgctg acgcgggaac cggtagctggc 1260
gaccgcgcac gcgctggagg aagtcaccgt gctggagatg gcccgtagcg agatcgagcg 1320
cctggtgcac cgaaagccga tcctgctgca cgtgatcggg gccgtg 1366

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<210> 121

<211> 455

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (318)...(318)

<221> UNSURE

<222> (324)...(324)

<400> 121

```

Met Ser Ser Val Leu Asn Ser Thr Trp Leu Ala Trp Ala Val Ala Val
1      5      10      15
Ala Val Gly Phe Pro Val Leu Leu Val Val Leu Thr Glu Val His Asn
20      25      30
Ala Leu Arg Arg Arg Gly Ser Ala Leu Ala Arg Pro Val Gln Leu Leu
35      40      45
Arg Thr Tyr Ile Leu Pro Leu Gly Ala Leu Leu Leu Leu Val Gln
50      55      60
Ala Met Glu Ile Ser Asp Asp Ala Thr Ser Val Arg Leu Val Ala Thr
65      70      75      80
Leu Phe Gly Val Val Leu Leu Thr Leu Val Leu Ser Gly Leu Asn Ala
85      90      95
Thr Leu Ile Gln Gly Ala Pro Glu Asp Ser Trp Arg Arg Arg Ile Pro
100     105     110
Ser Ile Phe Leu Asp Val Ala Arg Phe Ala Leu Ile Ala Val Gly Ile
115     120     125
Thr Val Ile Met Ala Tyr Val Trp Gly Ala Asn Val Gly Gly Leu Phe
130     135     140
Thr Ala Leu Gly Val Thr Ser Ile Val Leu Gly Leu Ala Leu Gln Asn
145     150     155     160
Ser Val Gly Gln Ile Ile Ser Gly Leu Leu Leu Leu Phe Glu Gln Pro
165     170     175
Phe Arg Leu Gly Asp Trp Ile Thr Val Pro Thr Ala Ala Gly Arg Pro
180     185     190
Ser Ala His Gly Arg Val Val Glu Val Asn Trp Arg Ala Thr His Ile
195     200     205
Asp Thr Gly Gly Asn Leu Leu Val Met Pro Asn Ala Glu Leu Ala Gly
210     215     220
Ala Ser Phe Thr Asn Tyr Ser Arg Pro Val Gly Glu His Arg Leu Thr

```

225		230		235		240									
Val	Val	Thr	Thr	Phe	Asn	Ala	Ala	Asp	Thr	Pro	Asp	Asp	Val	Cys	Glu
				245					250					255	
Met	Leu	Ser	Ser	Val	Ala	Ala	Ser	Leu	Pro	Glu	Leu	Arg	Thr	Asp	Gly
			260					265					270		
Gln	Ile	Ala	Thr	Leu	Tyr	Leu	Gly	Ala	Ala	Glu	Tyr	Glu	Lys	Ser	Ile
		275					280					285			
Pro	Leu	His	Thr	Pro	Ala	Val	Asp	Asp	Ser	Val	Arg	Ser	Thr	Tyr	Leu
	290					295					300				
Arg	Trp	Val	Trp	Tyr	Ala	Ala	Arg	Arg	Gln	Glu	Leu	Arg	Xaa	Asn	Gly
305					310					315					320
Val	Ala	Asp	Xaa	Phe	Asp	Thr	Pro	Glu	Arg	Ile	Ala	Ser	Ala	Met	Arg
			325						330					335	
Ala	Val	Ala	Ser	Thr	Leu	Arg	Leu	Ala	Asp	Asp	Glu	Gln	Gln	Glu	Ile
		340						345					350		
Ala	Asp	Val	Val	Arg	Leu	Val	Arg	Tyr	Gly	Asn	Gly	Glu	Arg	Leu	Gln
	355					360					365				
Gln	Pro	Gly	Gln	Val	Pro	Thr	Gly	Met	Arg	Phe	Ile	Val	Asp	Gly	Arg
	370					375					380				
Val	Ser	Leu	Ser	Val	Ile	Asp	Gln	Asp	Gly	Asp	Val	Ile	Pro	Ala	Arg
385					390					395					400
Val	Leu	Glu	Arg	Gly	Asp	Phe	Leu	Gly	Gln	Thr	Thr	Leu	Thr	Arg	Glu
			405					410					415		
Pro	Val	Leu	Ala	Thr	Ala	His	Ala	Leu	Glu	Glu	Val	Thr	Val	Leu	Glu
		420					425					430			
Met	Ala	Arg	Asp	Glu	Ile	Glu	Arg	Leu	Val	His	Arg	Lys	Pro	Ile	Leu
	435					440					445				
Leu	His	Val	Ile	Gly	Ala	Val									
	450					455									

<210> 122  
 <211> 898  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 122

atgacaattc	tgccctggaa	tgcgcgaaacg	tctgaacacc	cgacgcgaaa	aagacgcggg	60
cgctaccacc	tcctgtcgcg	gatgagcatc	cagtccaagt	tgctgctgat	gctgcttctg	120
accagcattc	tctcggtgcg	gggtggtcgg	ttcatcggtc	atcagtcagg	acggtcctcg	180
ctgcgcgcac	cggtgttcga	ccgcctcacc	gacatccgcg	agtcgcagtc	gcgcgggttg	240
gagaatcagt	tcgcggacct	gaagaactcg	atgggtgattt	actcgcgcgg	cagcactgcc	300
acggaggcga	tcggcgcggt	cagcgacggg	ttccgctcag	tcggcgatgc	gacgatcaat	360
accgggcagg	cggcgtcatt	gcgcgcgttac	tacgaccgga	cgttcgccaa	caccaccctc	420
gacgacagcg	gaaaccgcgt	cgacgtccgc	gcgctcatcc	cgaaatccaa	ccccagcgc	480
tatctgcagg	cgctctatac	cccgcggttt	cagaactggg	agaaggcgat	cgcgttcgac	540
gacgcgcgcg	acggcgagcg	ctggctcgcc	gccaatgcc	gattcaacga	gttcttccgc	600
gagatcgtgc	accgcttcaa	cttcgaggat	ctgatgctgc	tcgacctcga	gggcaacgtg	660
gtgtactccg	cctacaaggg	gccggatctc	gggacaaaca	tcgtcaacgg	cccctatcgc	720
aaccgggaac	tgctcggaagc	ctacgagaag	gcggctcgct	cgaactcgat	cgactatgtc	780
gggtgtcaccg	acttcgggtg	gtacctgcct	gccgaggaac	cgaccgcctg	gttctgtgcc	840
ccggtcgggt	tgaaggaccg	agtcgacggg	gtgatggcgg	tccagttccc	cggaattc	898

<210> 123  
 <211> 1259  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 123

cgcaattgat	gacggcgcg	ggacagtggc	gtgacaccgg	gatgggagac	accggtgaga	60
ccatcctggt	cggaccggac	aatctgatgc	gctcggactc	cgggctgttc	cgcgagaacc	120
gggagaagtt	cctggccgac	gtcgtcgagg	ggggaacccc	gccggagggtc	gccgacgaat	180
cggttgaccg	ccgcggcacc	acgctggtgc	agccggtgac	caccgcgtcc	gtcgaggagg	240
cccaacgcgg	caacaccggg	acgacgatcg	aggacgacta	tctcggccac	gaggcggttac	300
aggcgtactc	accggtggac	ctgccgggac	tgcactgggt	gatcgtggcc	aagatcgaca	360
ccgacgaggc	gttcgccccg	gtggcgagc	tcaccaggac	cctggtgctg	tcgacggtga	420
tcacatcatc	cggcggtgtc	ctggcgccca	tgctgctggc	gcggttggtc	gtccgtccga	480
tccggcggtt	gcaggccggc	gcccagcaga	tcagcgggcg	tgactaccgc	ctcgctctgc	540
cgggtgtgtc	tcgtgacgaa	ttcggcgatc	tgacaacagc	tttcaacgac	atgagtcgca	600
atctgtcgat	caaggacgag	ctgctcggcg	aggagcgcg	cgagaaccaa	cggctgatgc	660
tgctcctgat	gcccgaaccg	gtgatgcagc	gctacctoga	cggggaggag	acgatcgccc	720
aggaccacaa	gaacgtcacg	gtgatcttcg	ccgacatgat	gggcctcgac	gagttgtcgc	780
gcattgtgac	ctccgaggaa	ctgatggtgg	tggtcaacga	cctgaccgcg	cagttcgacg	840
ccgccgcga	gagtcctcgg	gtcgaccacg	tgccgacgct	gcacgacggg	tacctggcca	900
gctgcggggt	aggcgtggcg	cggctggaca	acgtccggcg	cacggtcaat	ttcgcgatcg	960
aaatggaccg	catcatcgac	cggcacggcg	ccgagtcggg	gcacgacctg	cggctcccg	1020
cgggcatcga	caccgggtcg	gcggccagcg	ggctgggtggg	gcggtccacg	ttggcgtagc	1080
acatgtgggg	ttcggcggtc	gatgtcgctc	accaggtgca	gcgcgggtcc	ccccagccc	1140
gcattctacg	cacctcgcg	gtgcacgagg	tcattcgagga	aactctcgac	ttcgtcgccg	1200
ccggggagggt	cgtcggcgag	cgcggcgctc	agacgggtctg	gcggttgacg	ggccacccg	1259

<210> 124

<211> 299

<212> PRT

<213> Mycobacterium vaccae

<400> 124

Met	Thr	Ile	Leu	Pro	Trp	Asn	Ala	Arg	Thr	Ser	Glu	His	Pro	Thr	Arg
1				5					10					15	
Lys	Arg	Arg	Gly	Arg	Tyr	His	Leu	Leu	Ser	Arg	Met	Ser	Ile	Gln	Ser
			20					25					30		
Lys	Leu	Leu	Leu	Met	Leu	Leu	Leu	Thr	Ser	Ile	Leu	Ser	Ala	Ala	Val
		35					40					45			
Val	Gly	Phe	Ile	Gly	Tyr	Gln	Ser	Gly	Arg	Ser	Ser	Leu	Arg	Ala	Ser
	50					55					60				
Val	Phe	Asp	Arg	Leu	Thr	Asp	Ile	Arg	Glu	Ser	Gln	Ser	Arg	Gly	Leu
65					70				75					80	
Glu	Asn	Gln	Phe	Ala	Asp	Leu	Lys	Asn	Ser	Met	Val	Ile	Tyr	Ser	Arg
			85					90					95		
Gly	Ser	Thr	Ala	Thr	Glu	Ala	Ile	Gly	Ala	Phe	Ser	Asp	Gly	Phe	Arg
			100					105					110		
Gln	Leu	Gly	Asp	Ala	Thr	Ile	Asn	Thr	Gly	Gln	Ala	Ala	Ser	Leu	Arg
		115					120					125			
Arg	Tyr	Tyr	Asp	Arg	Thr	Phe	Ala	Asn	Thr	Thr	Leu	Asp	Asp	Ser	Gly
	130					135					140				
Asn	Arg	Val	Asp	Val	Arg	Ala	Leu	Ile	Pro	Lys	Ser	Asn	Pro	Gln	Arg
145					150					155				160	
Tyr	Leu	Gln	Ala	Leu	Tyr	Thr	Pro	Pro	Phe	Gln	Asn	Trp	Glu	Lys	Ala
			165					170						175	
Ile	Ala	Phe	Asp	Asp	Ala	Arg	Asp	Gly	Ser	Ala	Trp	Ser	Ala	Ala	Asn
			180					185					190		
Ala	Arg	Phe	Asn	Glu	Phe	Phe	Arg	Glu	Ile	Val	His	Arg	Phe	Asn	Phe
	195						200					205			
Glu	Asp	Leu	Met	Leu	Leu	Asp	Leu	Glu	Gly	Asn	Val	Val	Tyr	Ser	Ala
	210					215					220				

Tyr	Lys	Gly	Pro	Asp	Leu	Gly	Thr	Asn	Ile	Val	Asn	Gly	Pro	Tyr	Arg
225					230					235					240
Asn	Arg	Glu	Leu	Ser	Glu	Ala	Tyr	Glu	Lys	Ala	Val	Ala	Ser	Asn	Ser
				245					250					255	
Ile	Asp	Tyr	Val	Gly	Val	Thr	Asp	Phe	Gly	Trp	Tyr	Leu	Pro	Ala	Glu
			260					265					270		
Glu	Pro	Thr	Ala	Trp	Phe	Leu	Ser	Pro	Val	Gly	Leu	Lys	Asp	Arg	Val
		275					280					285			
Asp	Gly	Val	Met	Ala	Val	Gln	Phe	Pro	Gly	Ile					
290						295									

<210> 125

<211> 419

<212> PRT

<213> Mycobacterium vaccae

<400> 125

Gln	Leu	Met	Thr	Ala	Arg	Gly	Gln	Trp	Arg	Asp	Thr	Gly	Met	Gly	Asp
1				5					10				15		
Thr	Gly	Glu	Thr	Ile	Leu	Val	Gly	Pro	Asp	Asn	Leu	Met	Arg	Ser	Asp
			20					25				30			
Ser	Arg	Leu	Phe	Arg	Glu	Asn	Arg	Glu	Lys	Phe	Leu	Ala	Asp	Val	Val
		35					40					45			
Glu	Gly	Gly	Thr	Pro	Pro	Glu	Val	Ala	Asp	Glu	Ser	Val	Asp	Arg	Arg
		50				55					60				
Gly	Thr	Thr	Leu	Val	Gln	Pro	Val	Thr	Thr	Arg	Ser	Val	Glu	Glu	Ala
65					70				75						80
Gln	Arg	Gly	Asn	Thr	Gly	Thr	Thr	Ile	Glu	Asp	Asp	Tyr	Leu	Gly	His
			85					90					95		
Glu	Ala	Leu	Gln	Ala	Tyr	Ser	Pro	Val	Asp	Leu	Pro	Gly	Leu	His	Trp
			100					105					110		
Val	Ile	Val	Ala	Lys	Ile	Asp	Thr	Asp	Glu	Ala	Phe	Ala	Pro	Val	Ala
		115					120					125			
Gln	Phe	Thr	Arg	Thr	Leu	Val	Leu	Ser	Thr	Val	Ile	Ile	Ile	Phe	Gly
		130				135					140				
Val	Ser	Leu	Ala	Ala	Met	Leu	Leu	Ala	Arg	Leu	Phe	Val	Arg	Pro	Ile
145					150				155						160
Arg	Arg	Leu	Gln	Ala	Gly	Ala	Gln	Gln	Ile	Ser	Gly	Gly	Asp	Tyr	Arg
			165					170					175		
Leu	Ala	Leu	Pro	Val	Leu	Ser	Arg	Asp	Glu	Phe	Gly	Asp	Leu	Thr	Thr
			180					185					190		
Ala	Phe	Asn	Asp	Met	Ser	Arg	Asn	Leu	Ser	Ile	Lys	Asp	Glu	Leu	Leu
		195					200					205			
Gly	Glu	Glu	Arg	Ala	Glu	Asn	Gln	Arg	Leu	Met	Leu	Ser	Leu	Met	Pro
		210				215					220				
Glu	Pro	Val	Met	Gln	Arg	Tyr	Leu	Asp	Gly	Glu	Glu	Thr	Ile	Ala	Gln
225					230				235						240
Asp	His	Lys	Asn	Val	Thr	Val	Ile	Phe	Ala	Asp	Met	Met	Gly	Leu	Asp
			245					250					255		
Glu	Leu	Ser	Arg	Met	Leu	Thr	Ser	Glu	Glu	Leu	Met	Val	Val	Val	Asn
			260					265					270		
Asp	Leu	Thr	Arg	Gln	Phe	Asp	Ala	Ala	Ala	Glu	Ser	Leu	Gly	Val	Asp
		275					280					285			
His	Val	Arg	Thr	Leu	His	Asp	Gly	Tyr	Leu	Ala	Ser	Cys	Gly	Leu	Gly
		290				295					300				
Val	Pro	Arg	Leu	Asp	Asn	Val	Arg	Arg	Thr	Val	Asn	Phe	Ala	Ile	Glu
305					310					315					320

Met Asp Arg Ile Ile Asp Arg His Ala Ala Glu Ser Gly His Asp Leu  
325 330 335  
Arg Leu Arg Ala Gly Ile Asp Thr Gly Ser Ala Ala Ser Gly Leu Val  
340 345 350  
Gly Arg Ser Thr Leu Ala Tyr Asp Met Trp Gly Ser Ala Val Asp Val  
355 360 365  
Ala Tyr Gln Val Gln Arg Gly Ser Pro Gln Pro Gly Ile Tyr Val Thr  
370 375 380  
Ser Arg Val His Glu Val Met Gln Glu Thr Leu Asp Phe Val Ala Ala  
385 390 395 400  
Gly Glu Val Val Gly Glu Arg Gly Val Glu Thr Val Trp Arg Leu Gln  
405 410 415  
Gly His Pro

<210> 126  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 126

ccggatccga tgagcagcgt gctgaac

27

<210> 127  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 127

gcggatccca cggccccgat cacgtg

26

<210> 128  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 128

ccggatccaa tgacatttct gccctggaat gcg

33

<210> 129  
<211> 32  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 129

ccggatccat tcggtggccc tgcaaccgcc ag

32

<210> 130  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 130  
ccggatccgg agcaaccggt ccggctc

27

<210> 131  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 131  
ccggatcccg gctatcagtc cggacgg

27

<210> 132  
<211> 844  
<212> DNA  
<213> Mycobacterium vaccae

<400> 132

gagcaaccgt	tccgggtcgg	cgactggatc	accgtcccca	ccgcggcggg	ccggccgtcc	60
gcccacggcc	gcgtgggtgga	agtcaactgg	cgtgcaacac	atatcgacac	ccggcggcaac	120
ctgctggtaa	tgcccaacgc	cgaactcgcc	ggcgcgtcgt	tcaccaatta	cagccggccc	180
gtgggagagc	accggctgac	cgtcgtcacc	accttcaacg	ccgcggacac	ccccgatgat	240
gtctgcgaga	tgctgtcgtc	ggtcgcggcg	tcgctgcccg	aactgcgcac	cgacggacag	300
atcgccacgc	tctatctcgg	tgcgcccgaa	tacgagaagt	cgatcccgtt	gcacacaccc	360
gcggtggacg	actcggtcag	gagcacgtac	ctgcgatggg	tctggtacgc	cgcgcgccgg	420
caggaacttc	gcctaacggc	gtcgccgacg	attcgacacg	ccggaacgga	tcgcctcggc	480
catgcgggct	gtggcgtcca	cactgcgctt	ggcagacgac	gaacagcagg	agatcgccga	540
cgtggtgcgt	ctggtccgtt	acggcaacgg	ggaacgcctc	cagcagccgg	gtcaggtacc	600
gaccgggatg	aggttcatcg	tagacggcag	ggtgagtcgt	tccgtgatcg	atcaggacgg	660
cgacgtgatc	ccggcgccgg	tgctcgagcg	tggcgacttc	ctggggcaga	ccacgctgac	720
gcgggaaccg	gtactggcga	ccgcgcacgc	gctggaggaa	gtcaccgtgc	tggagatggc	780
ccgtgacgag	atcgagcgcc	tggcgcaccg	aaagccgatc	ctgctgcacg	tgatcggggc	840
cgtg						844

<210> 133  
<211> 742  
<212> DNA  
<213> Mycobacterium vaccae

<400> 133

ggctatcagt	ccggacggtc	ctcgctgcgc	gcatcggtgt	tcgaccgcct	caccgacatc	60
cgcgagtgcg	agtcgcgcgg	ggtggagaat	cagttcgccg	acctgaagaa	ctcgatgggtg	120
atttactcgc	gcggcagcac	tgccacggag	gcgatccggc	cgttcagcga	cggtttccgt	180
cagctcggcg	atgcgacgat	caataccggg	caggcggcgt	cattgcgcgc	ttactacgac	240
cggacgttcg	ccaacaccac	cctcgacgac	agcggaaacc	gcgtcgacgt	ccgcgcgctc	300

atccccgaaat ccaacccccca ggcgtatctg caggcgctct ataccccgcc gtttcagaac 360  
 tgggagaagg cgatcgcggt cgacgacgcg cgcgacggca ggcgctggtc ggccgccaat 420  
 gccagattca acgagttctt ccgcgagatc gtgcaccgct tcaacttcga ggatctgatg 480  
 ctgctcgacc tcgagggcaa cgtgggtgtac tccgcctaca agggggccgga tctcgggaca 540  
 aacatcgta acggccccta tcgcaaccgg gaactgtcgg aagcctacga gaaggcggtc 600  
 gcgtcgaaact cgatcgacta tgtcgggtgtc accgacttcg ggtggtacct gcctgccgag 660  
 gaaccgaccg cctgggttcct gtccccggtc gggttgaagg accgagtcga cgggtgtgatg 720  
 gcggtccagt tccccggaat tc 742

<210> 134  
 <211> 282  
 <212> PRT  
 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (145)...(145)

<221> UNSURE  
 <222> (151)...(151)

<400> 134

Glu	Gln	Pro	Phe	Arg	Leu	Gly	Asp	Trp	Ile	Thr	Val	Pro	Thr	Ala	Ala
1				5					10					15	
Gly	Arg	Pro	Ser	Ala	His	Gly	Arg	Val	Val	Glu	Val	Asn	Trp	Arg	Ala
			20					25					30		
Thr	His	Ile	Asp	Thr	Gly	Gly	Asn	Leu	Leu	Val	Met	Pro	Asn	Ala	Glu
		35					40						45		
Leu	Ala	Gly	Ala	Ser	Phe	Thr	Asn	Tyr	Ser	Arg	Pro	Val	Gly	Glu	His
	50						55				60				
Arg	Leu	Thr	Val	Val	Thr	Thr	Phe	Asn	Ala	Ala	Asp	Thr	Pro	Asp	Asp
65					70					75					80
Val	Cys	Glu	Met	Leu	Ser	Ser	Val	Ala	Ala	Ser	Leu	Pro	Glu	Leu	Arg
				85					90					95	
Thr	Asp	Gly	Gln	Ile	Ala	Thr	Leu	Tyr	Leu	Gly	Ala	Ala	Glu	Tyr	Glu
		100						105					110		
Lys	Ser	Ile	Pro	Leu	His	Thr	Pro	Ala	Val	Asp	Asp	Ser	Val	Arg	Ser
		115						120					125		
Thr	Tyr	Leu	Arg	Trp	Val	Trp	Tyr	Ala	Ala	Arg	Arg	Gln	Glu	Leu	Arg
	130					135				140					
Xaa	Asn	Gly	Val	Ala	Asp	Xaa	Phe	Asp	Thr	Pro	Glu	Arg	Ile	Ala	Ser
145					150					155					160
Ala	Met	Arg	Ala	Val	Ala	Ser	Thr	Leu	Arg	Leu	Ala	Asp	Asp	Glu	Gln
				165					170					175	
Gln	Glu	Ile	Ala	Asp	Val	Val	Arg	Leu	Val	Arg	Tyr	Gly	Asn	Gly	Glu
		180						185					190		
Arg	Leu	Gln	Gln	Pro	Gly	Gln	Val	Pro	Thr	Gly	Met	Arg	Phe	Ile	Val
	195						200					205			
Asp	Gly	Arg	Val	Ser	Leu	Ser	Val	Ile	Asp	Gln	Asp	Gly	Asp	Val	Ile
	210					215				220					
Pro	Ala	Arg	Val	Leu	Glu	Arg	Gly	Asp	Phe	Leu	Gly	Gln	Thr	Thr	Leu
225					230					235					240
Thr	Arg	Glu	Pro	Val	Leu	Ala	Thr	Ala	His	Ala	Leu	Glu	Glu	Val	Thr
				245					250					255	
Val	Leu	Glu	Met	Ala	Arg	Asp	Glu	Ile	Glu	Arg	Leu	Val	His	Arg	Lys
			260					265					270		
Pro	Ile	Leu	Leu	His	Val	Ile	Gly	Ala	Val						



275

280

&lt;210&gt; 135

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Mycobacterium vaccae

&lt;400&gt; 135

Gly Tyr Gln Ser Gly Arg Ser Ser Leu Arg Ala Ser Val Phe Asp Arg  
 1 5 10 15  
 Leu Thr Asp Ile Arg Glu Ser Gln Ser Arg Gly Leu Glu Asn Gln Phe  
 20 25 30  
 Ala Asp Leu Lys Asn Ser Met Val Ile Tyr Ser Arg Gly Ser Thr Ala  
 35 40 45  
 Thr Glu Ala Ile Gly Ala Phe Ser Asp Gly Phe Arg Gln Leu Gly Asp  
 50 55 60  
 Ala Thr Ile Asn Thr Gly Gln Ala Ala Ser Leu Arg Arg Tyr Tyr Asp  
 65 70 75 80  
 Arg Thr Phe Ala Asn Thr Thr Leu Asp Asp Ser Gly Asn Arg Val Asp  
 85 90 95  
 Val Arg Ala Leu Ile Pro Lys Ser Asn Pro Gln Arg Tyr Leu Gln Ala  
 100 105 110  
 Leu Tyr Thr Pro Pro Phe Gln Asn Trp Glu Lys Ala Ile Ala Phe Asp  
 115 120 125  
 Asp Ala Arg Asp Gly Ser Ala Trp Ser Ala Ala Asn Ala Arg Phe Asn  
 130 135 140  
 Glu Phe Phe Arg Glu Ile Val His Arg Phe Asn Phe Glu Asp Leu Met  
 145 150 155 160  
 Leu Leu Asp Leu Glu Gly Asn Val Val Tyr Ser Ala Tyr Lys Gly Pro  
 165 170 175  
 Asp Leu Gly Thr Asn Ile Val Asn Gly Pro Tyr Arg Asn Arg Glu Leu  
 180 185 190  
 Ser Glu Ala Tyr Glu Lys Ala Val Ala Ser Asn Ser Ile Asp Tyr Val  
 195 200 205  
 Gly Val Thr Asp Phe Gly Trp Tyr Leu Pro Ala Glu Glu Pro Thr Ala  
 210 215 220  
 Trp Phe Leu Ser Pro Val Gly Leu Lys Asp Arg Val Asp Gly Val Met  
 225 230 235 240  
 Ala Val Gln Phe Pro Gly Ile  
 245

&lt;210&gt; 136

&lt;211&gt; 45

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium vaccae

&lt;220&gt;

&lt;221&gt; unsure

&lt;222&gt; (18)...(18)

&lt;400&gt; 136

atgagcgaaa tcgcccgncc ctggcggggt ctggcatgtg gcac

45

&lt;210&gt; 137

&lt;211&gt; 340

&lt;212&gt; DNA

&lt;213&gt; Mycobacterium vaccae

<220>  
 <221> unsure  
 <222> (273)...(273)

<221> unsure  
 <222> (286)...(286)

<400> 137

gccaccggcg	gcgccgcgc	ggtgcccgc	ggggtgagcg	ccccggcgg	cgcgccggcc	60
cccgcgatgc	ccgcccgc	ggtgtccacg	atcgcccg	cgacctcggg	cacgttcagc	120
gagtttttcg	ccgccaagg	cgtcacgatg	gagccgcagt	ccagccgcga	cttcgcgcc	180
ctcaacatcg	tgctgcgaa	gccgcggggc	tgggagcaca	tcccggaccc	gaacgtgccg	240
gacgcgttcg	cggtgctggc	cgaccgggtc	agnggtaaag	gtcagnagtc	gacaaacgcc	300
cacgtggtgg	tcgacaaaca	cgtaggcgag	ttcgacggca			340

<210> 138  
 <211> 235  
 <212> DNA  
 <213> Mycobacterium vaccae

<220>  
 <221> unsure  
 <222> (16)...(16)

<400> 138

ggtgaccacc	agcgtngaac	aggtcgttgc	cgaagccgcg	gaggccaccg	acgcgattgt	60
caacgggttc	aaggtcagcg	ttccgggtcc	gggtccggcc	gcaccgccac	ctgcaccggg	120
tgcccccggt	gtccgcgccg	ccccggcgcg	cccggcgctg	ccgctggccg	tcgcaccacc	180
cccggctccc	gctgttcccg	ccgtggcgcc	cgcgccacag	ctgctggggac	tgacg	235

<210> 139  
 <211> 15  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 139

Met	Ser	Glu	Ile	Ala	Arg	Pro	Trp	Arg	Val	Leu	Ala	Cys	Gly	Ile
1				5					10					15

<210> 140  
 <211> 113  
 <212> PRT  
 <213> Mycobacterium vaccae

<220>  
 <221> UNSURE  
 <222> (96)...(96)

<400> 140

Ala	Thr	Gly	Gly	Ala	Ala	Ala	Val	Pro	Ala	Gly	Val	Ser	Ala	Pro	Ala
1				5					10					15	
Val	Ala	Pro	Ala	Pro	Ala	Met	Pro	Ala	Arg	Pro	Val	Ser	Thr	Ile	Ala
				20					25				30		
Pro	Ala	Thr	Ser	Gly	Thr	Leu	Ser	Glu	Phe	Phe	Ala	Ala	Lys	Gly	Val
				35				40				45			
Thr	Met	Glu	Pro	Gln	Ser	Ser	Arg	Asp	Phe	Arg	Ala	Leu	Asn	Ile	Val

[illegible]

<400> 141

```
<210> 142
<211> 273
<212> DNA
<213> Mycobacterium vaccae
```

<400> 142

```
<210> 143
<211> 91
<212> PRT
<213> Mycobacterium vaccae
```

<400> 143

55

<210> 144  
 <211> 554  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 144

gatgtcacgc	cgggagaatg	taacgttcga	cgggagaacg	ccgtcggcac	aacgagttac	60
gtttgagcac	ttcagatctc	ggttaccttg	gatttcaggc	gggggaagca	gtaaccgatc	120
caagattcga	aggacccaaa	caacatgaaa	ttcactggaa	tgaccgtgcg	cgcaagccgc	180
gcgccctggc	cggcgctcggg	gcggcatgtc	tgttcggcgg	cgtggccgcg	gcaaccgtgg	240
cggcacagat	ggcgggcgcc	cagccggccg	agtgcacgc	cagctcactc	accggcaccg	300
tcagctcggt	gaccggtcag	gcgcgtcagt	acctagacac	ccaccggggc	gccaaccagg	360
ccgtcaccgc	ggcgatgaac	cagccgcggc	ccgaggccga	ggcgaacctg	cggggctact	420
tcaccgccaa	cccggcggag	tactacgacc	tgccggggcat	cctcgccccg	atcggtgacg	480
cgcagcgcaa	ctgcaacatc	accgtgctgc	cggtagagct	gcagacggcc	tacgacacgt	540
tcatggccgg	ctga					554

<210> 145  
 <211> 136  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 145

Met	Lys	Phe	Thr	Gly	Met	Thr	Val	Arg	Ala	Ser	Arg	Arg	Ala	Leu	Ala
1				5				10					15		
Gly	Val	Gly	Ala	Ala	Cys	Leu	Phe	Gly	Gly	Val	Ala	Ala	Ala	Thr	Val
			20					25					30		
Ala	Ala	Gln	Met	Ala	Gly	Ala	Gln	Pro	Ala	Glu	Cys	Asn	Ala	Ser	Ser
			35				40					45			
Leu	Thr	Gly	Thr	Val	Ser	Ser	Val	Thr	Gly	Gln	Ala	Arg	Gln	Tyr	Leu
	50					55				60					
Asp	Thr	His	Pro	Gly	Ala	Asn	Gln	Ala	Val	Thr	Ala	Ala	Met	Asn	Gln
65					70				75					80	
Pro	Arg	Pro	Glu	Ala	Glu	Ala	Asn	Leu	Arg	Gly	Tyr	Phe	Thr	Ala	Asn
				85				90						95	
Pro	Ala	Glu	Tyr	Tyr	Asp	Leu	Arg	Gly	Ile	Leu	Ala	Pro	Ile	Gly	Asp
			100				105						110		
Ala	Gln	Arg	Asn	Cys	Asn	Ile	Thr	Val	Leu	Pro	Val	Glu	Leu	Gln	Thr
			115				120						125		
Ala	Tyr	Asp	Thr	Phe	Met	Ala	Gly								
	130					135									

<210> 146  
 <211> 808  
 <212> DNA  
 <213> Mycobacterium vaccae

<220>  
 <221> unsure  
 <222> (15)...(15)

<400> 146

ccaagtgtga	cgcngtgtg	acggtagacg	ttccgaccaa	tccaacgacg	ccgcagctgg	60
gaatcaccgc	tgtgccaaatt	cagtgcgggc	aacgggtgcc	gtccacgaag	ggattcagga	120
aatgatgaca	actcgccgga	agtcagccgc	agtggcggga	atcgctgcgg	tggccatcct	180
cgggtgcggcc	gcattgttga	gtgaggacgg	tgggagcacg	gcctcgtcgg	ccagcagcac	240

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ggcctcctcc gcgatggagt ccgcgaccga cgagatgacc acgtcgtcgg cggccccttc 300
ggccgaccct gcggccaacc tgatcggctc cggtcgcgcg gcctacgccg agcaggtccc 360
cgaaggtccc gggtcggtgg ccgggatggc agccgatccg gtgacggtgg cggcgtcgaa 420
caaccgatg ctgcagacgc tgtcccaggc gctgtccggc cagctcaatc cgcaggtcaa 480
tctcgtcgac accctcgacg gcggtgagtt caccgtgttc gcgccgaccg acgacgcgtt 540
cgccaagatc gatccggcca cgctggagac cctcaagacg gactccgaca tgctgaccaa 600
catcctgacc taccacgtcg tgcccggcca ggccgcgccc gatcaggtgg tcggcgagca 660
tgtgacggtg gagggggcgc cggtcacggt gtccgggatg gccgaccagc tcaaggtcaa 720
cgacgcgtcg gtggtgtgcg gtggggtgca gaccgccaac gcgacggtgt atctgatcga 780
caccgtgctg atgccgcgcg cagcgtag 808

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<210> 147

<211> 228

<212> PRT

<213> Mycobacterium vaccae

<400> 147

```

Met Met Thr Thr Arg Arg Lys Ser Ala Ala Val Ala Gly Ile Ala Ala
 1          5          10          15
Val Ala Ile Leu Gly Ala Ala Ala Cys Ser Ser Glu Asp Gly Gly Ser
 20          25          30
Thr Ala Ser Ser Ala Ser Ser Thr Ala Ser Ser Ala Met Glu Ser Ala
 35          40          45
Thr Asp Glu Met Thr Thr Ser Ser Ala Ala Pro Ser Ala Asp Pro Ala
 50          55          60
Ala Asn Leu Ile Gly Ser Gly Cys Ala Ala Tyr Ala Glu Gln Val Pro
 65          70          75          80
Glu Gly Pro Gly Ser Val Ala Gly Met Ala Ala Asp Pro Val Thr Val
 85          90          95
Ala Ala Ser Asn Asn Pro Met Leu Gln Thr Leu Ser Gln Ala Leu Ser
 100         105         110
Gly Gln Leu Asn Pro Gln Val Asn Leu Val Asp Thr Leu Asp Gly Gly
 115         120         125
Glu Phe Thr Val Phe Ala Pro Thr Asp Asp Ala Phe Ala Lys Ile Asp
 130         135         140
Pro Ala Thr Leu Glu Thr Leu Lys Thr Asp Ser Asp Met Leu Thr Asn
 145         150         155         160
Ile Leu Thr Tyr His Val Val Pro Gly Gln Ala Ala Pro Asp Gln Val
 165         170         175
Val Gly Glu His Val Thr Val Glu Gly Ala Pro Val Thr Val Ser Gly
 180         185         190
Met Ala Asp Gln Leu Lys Val Asn Asp Ala Ser Val Val Cys Gly Gly
 195         200         205
Val Gln Thr Ala Asn Ala Thr Val Tyr Leu Ile Asp Thr Val Leu Met
 210         215         220
Pro Pro Ala Ala
225

```

<210> 148

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<221> unsure

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<222> (12)...(12)

<221> unsure
<222> (17)...(17)

<400> 148
gcscscsgtsg gnccggntgy gc                                22

<210> 149
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<221> unsure
<222> (10)...(10)

<221> unsure
<222> (13)...(13)

<221> unsure
<222> (16)...(16)

<221> unsure
<222> (20)...(20)

<400> 149
rtasgcsghcn gtngcnaeng g                                21

<210> 150
<211> 102
<212> DNA
<213> Artificial Sequence

<220>
<223> Made in a lab

<400> 150
gccccggtcg gccccggctg tgcggcctac gtgcaacagg tgccggacgg gccgggatcg      60
gtgcagggca tggcgagctc gcccgtagcg accgccgcgt at                          102

<210> 151
<211> 683
<212> DNA
<213> Mycobacterium vaccae

<400> 151
gcccgcgaac taaaaccgcc gatcatccac tgcaggaagg aatctcacga tcatgaacat      60
cagcatgaaa actcttgccg gagcgggttt cgcgatgacc gccgccgtcg gtctgtcgct      120
gggtaccgca ggcagcgccg cagccgcgcc ggtcggaccg ggggtgtgcg cctacgtgca      180
acaggtgccg gacggggccg gatcgggtga gggcatggcg agctcgccgg tggccaccgc      240
ggcggccgac aaccgcgtgc tcaccacgct ctgcgaggcg atctcgggtc agctcaaccc      300
gaacgtcaat ctgctcgaca cgttcaacgg cggccagttc accgtgttcg cgccgaccaa      360
tgacgccttc gccaaagatc atccggccac gctggagacc ctcaagaccg attccgacct      420
gctgaccaag atcctcacct accacgtcgt gcccgggccg gccgcgcccg atcaggtggg      480

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cggcgagcat gtgacgggtgg agggggcgcc ggtcacggtg tccgggatgg ccgaccagct 540  
 caaggtcaac gacgcgtcgg tgggtgtcgg tgggggtgcag accgccaacg cgacgggtga 600  
 tctgatcgac accgtgctga tgccgccggc agcgtagccg ggccggcacca cagaagaggg 660  
 tccccgcac ccggcctccc ccg 683

<210> 152  
 <211> 231  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 152  
 Asp Thr Val Leu Met Pro Pro Ala Asn Asn Arg Arg Ser Ser Thr Ala  
 1 5 10 15  
 Gly Arg Asn Leu Thr Ile Met Asn Ile Ser Met Lys Thr Leu Ala Gly  
 20 25 30  
 Ala Gly Phe Ala Met Thr Ala Ala Val Gly Leu Ser Leu Gly Thr Ala  
 35 40 45  
 Gly Ser Ala Ala Ala Ala Pro Val Gly Pro Gly Cys Ala Ala Tyr Val  
 50 55 60  
 Gln Gln Val Pro Asp Gly Pro Gly Ser Val Gln Gly Met Ala Ser Ser  
 65 70 75 80  
 Pro Val Ala Thr Ala Ala Ala Asp Asn Pro Leu Leu Thr Thr Leu Ser  
 85 90 95  
 Gln Ala Ile Ser Gly Gln Leu Asn Pro Asn Val Asn Leu Val Asp Thr  
 100 105 110  
 Phe Asn Gly Gly Gln Phe Thr Val Phe Ala Pro Thr Asn Asp Ala Phe  
 115 120 125  
 Ala Lys Ile Asp Pro Ala Thr Leu Glu Thr Leu Lys Thr Asp Ser Asp  
 130 135 140  
 Leu Leu Thr Lys Ile Leu Thr Tyr His Val Val Pro Gly Gln Ala Ala  
 145 150 155 160  
 Pro Asp Gln Val Val Gly Glu His Val Thr Val Glu Gly Ala Pro Val  
 165 170 175  
 Thr Val Ser Gly Met Ala Asp Gln Leu Lys Val Asn Asp Ala Ser Val  
 180 185 190  
 Val Cys Gly Gly Val Gln Thr Ala Asn Ala Thr Val Tyr Leu Ile Asp  
 195 200 205  
 Thr Val Leu Met Pro Pro Ala Ala Pro Gly Gly Thr Thr Glu Glu Gly  
 210 215 220  
 Pro Pro His Pro Ala Ser Pro  
 225 230

<210> 153  
 <211> 1125  
 <212> DNA  
 <213> Mycobacterium vaccae

<220>  
 <221> unsure  
 <222> (358)...(358)

<400> 153  
 atgcaggtgc ggcgtgttct gggcagtgtc ggtgcagcag tcgcggtttc ggccgcgtta 60  
 tggcagacgg gggtttcgat accgaccgcc tcagcggatc cgtgtccgga catcgaggtg 120  
 atcttcgcgc gcgggaccgg tgcggaaccc ggctcgggt gggtcggtga tgcgttcgtc 180  
 aacgcgctgc ggcccaaggt cggtgagcag tcggtgggca cctacgcggt gaactaccgg 240  
 gcaggattcg gacttcgaca aatcggcgcc catgggcgcg gccgacgcat cggggcgggt 300

```
gcagtggatg gccgacaact gcccgacac caagcttgtc ctgggcggca tgtcgcanng 360
cgccggcgtc atcgacctga tcaccgtcga tcccgacccg ctgggcgggt tcacccccac 420
cccgatgccg ccccgcgctc cgcaccacgt ggccggcggt gtgggtcttcg gaaatccggt 480
gcgcgacatc cgtggtggcg gtccgctgcc gcagatgagc ggcacctacg ggccgaagtc 540
gatcgatctg tgtgcgctcg acgatccggt ctgctcgccc ggcttcaacc tgccggccca 600
cttcgcctac gccgacaacg gcatggtgga ggaagccgag aacttcgccc gcctggaacc 660
gggccagagc gtcgagctgc ccgaggcgcc ctacctgcac ctgttcgtcc cgcggggcga 720
ggtaacgctg gaggacgccc gaccgctgag cgaaggcgac gcagtgcggt tcaccgcac 780
ggcgggccag cgggtgaccg ccaccgccc cgcggagatc ctcgtctggg agatgcatgc 840
gggactcggg ggggcataag cgaataggag tctgtctggc cggcgagcga ctgctcgccg 900
gatgcacatc cgaacctgga cccgggccc cggcgccacc ggccccgacg agcacaaccg 960
agagcgaccc cgggtcccgga ctgctcccg tgaccgtcgc ggtcgacgaa cctctggccg 1020
acgcgcccgt cgaccagccc cgggagggcc tggtgcccga ggggtggacg ctgtcggtgt 1080
ggcgcgccgac cgcccgccc cggctggccg cgtgggcccc ggacg 1125
```

<210> 154

<211> 748

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (119)...(119)

<400> 154

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Met Gln Val Arg Arg Val Leu Gly Ser Val Gly Ala Ala Val Ala Val
1 5 10 15
Ser Ala Ala Leu Trp Gln Thr Gly Val Ser Ile Pro Thr Ala Ser Ala
20 25 30
Asp Pro Cys Pro Asp Ile Glu Val Ile Phe Ala Arg Gly Thr Gly Ala
35 40 45
Glu Pro Gly Leu Gly Trp Val Gly Asp Ala Phe Val Asn Ala Leu Arg
50 55 60
Pro Lys Val Gly Glu Gln Ser Val Gly Thr Tyr Ala Val Asn Tyr Pro
65 70 75 80
Ala Gly Phe Asp Phe Asp Lys Ser Ala Pro Met Gly Ala Ala Asp Ala
85 90 95
Ser Gly Arg Val Gln Trp Met Ala Asp Asn Cys Pro Asp Thr Lys Leu
100 105 110
Val Leu Gly Gly Met Ser Xaa Gly Ala Gly Val Ile Asp Leu Ile Thr
115 120 125
Val Asp Pro Arg Pro Leu Gly Arg Phe Thr Pro Thr Pro Met Pro Pro
130 135 140
Arg Val Ala Asp His Val Ala Ala Val Val Val Phe Gly Asn Pro Leu
145 150 155 160
Arg Asp Ile Arg Gly Gly Gly Pro Arg Leu Glu Pro Arg Gly Leu Asn
165 170 175
Met Glu Thr Ser Glu Arg Gly Leu Tyr Thr His Arg Thr Tyr Arg Gly
180 185 190
Leu Tyr Pro Arg Leu Tyr Ser Ser Glu Arg Ile Leu Glu Ala Ser Pro
195 200 205
Leu Glu Cys Tyr Ser Ala Leu Ala Leu Glu Ala Ser Pro Ala Ser Pro
210 215 220
Pro Arg Pro His Glu Cys Tyr Ser Ser Glu Arg Pro Arg Gly Leu Tyr
225 230 235 240
Pro His Glu Ala Ser Asn Leu Glu Pro Arg Ala Leu Ala His Ile Ser
245 250 255
```



Pro	His	Glu	Ala	Leu	Ala	Thr	Tyr	Arg	Ala	Leu	Ala	Ala	Ser	Pro	Ala	260	265	270
Ser	Asn	Gly	Leu	Tyr	Met	Glu	Thr	Val	Ala	Leu	Gly	Leu	Gly	Leu	Ala	275	280	285
Leu	Ala	Ala	Leu	Ala	Ala	Ser	Asn	Pro	His	Glu	Ala	Leu	Ala	Ala	Arg	290	295	300
Gly	Leu	Glu	Gly	Leu	Pro	Arg	Gly	Leu	Tyr	Gly	Leu	Asn	Ser	Glu	Arg	305	310	315
Val	Ala	Leu	Gly	Leu	Leu	Glu	Pro	Arg	Gly	Leu	Ala	Leu	Ala	Pro	Arg	325	330	335
Thr	Tyr	Arg	Leu	Glu	His	Ile	Ser	Leu	Glu	Pro	His	Glu	Val	Ala	Leu	340	345	350
Pro	Arg	Ala	Arg	Gly	Gly	Leu	Tyr	Gly	Leu	Val	Ala	Leu	Thr	His	Arg	355	360	365
Leu	Glu	Gly	Leu	Ala	Ser	Pro	Ala	Leu	Ala	Gly	Leu	Tyr	Pro	Arg	Leu	370	375	380
Glu	Ala	Arg	Gly	Gly	Leu	Gly	Leu	Tyr	Ala	Ser	Pro	Ala	Leu	Ala	Val	385	390	395
Ala	Leu	Ala	Arg	Gly	Pro	His	Glu	Thr	His	Arg	Ala	Leu	Ala	Ser	Glu	405	410	415
Arg	Gly	Leu	Tyr	Gly	Leu	Tyr	Gly	Leu	Asn	Ala	Arg	Gly	Val	Ala	Leu	420	425	430
Thr	His	Arg	Ala	Leu	Ala	Thr	His	Arg	Ala	Leu	Ala	Pro	Arg	Ala	Leu	435	440	445
Ala	Gly	Leu	Ile	Leu	Glu	Leu	Glu	Val	Ala	Leu	Thr	Arg	Pro	Gly	Leu	450	455	460
Met	Glu	Thr	His	Ile	Ser	Ala	Leu	Ala	Gly	Leu	Tyr	Leu	Glu	Gly	Leu	465	470	475
Tyr	Ala	Leu	Ala	Ala	Leu	Ala	Ala	Leu	Ala	Ala	Ser	Asn	Ala	Arg	Gly	485	490	495
Ser	Glu	Arg	Pro	Arg	Ala	Leu	Ala	Gly	Leu	Tyr	Ala	Arg	Gly	Ala	Arg	500	505	510
Gly	Ser	Glu	Arg	Thr	His	Arg	Ala	Leu	Ala	Ala	Arg	Gly	Ala	Arg	Gly	515	520	525
Met	Glu	Thr	His	Ile	Ser	Ile	Leu	Glu	Ala	Arg	Gly	Thr	His	Arg	Thr	530	535	540
Arg	Pro	Thr	His	Arg	Ala	Arg	Gly	Ala	Leu	Ala	Val	Ala	Leu	Gly	Leu	545	550	555
Tyr	Gly	Leu	Tyr	Thr	His	Arg	Gly	Leu	Tyr	Pro	Arg	Ala	Ser	Pro	Gly	565	570	575
Leu	His	Ile	Ser	Ala	Ser	Asn	Ala	Arg	Gly	Gly	Leu	Ala	Arg	Gly	Thr	580	585	590
His	Arg	Ala	Arg	Gly	Ser	Glu	Arg	Ala	Arg	Gly	Thr	His	Arg	Ala	Arg	595	600	605
Gly	Pro	Arg	Gly	Leu	Tyr	Ala	Ser	Pro	Ala	Arg	Gly	Ala	Arg	Gly	Gly	610	615	620
Leu	Tyr	Ala	Arg	Gly	Ala	Arg	Gly	Thr	His	Arg	Ser	Glu	Arg	Gly	Leu	625	630	635
Tyr	Ala	Arg	Gly	Ala	Arg	Gly	Ala	Leu	Ala	Val	Ala	Leu	Ala	Arg	Gly	645	650	655
Pro	Arg	Ala	Leu	Ala	Pro	Arg	Gly	Leu	Tyr	Gly	Leu	Tyr	Pro	Arg	Gly	660	665	670
Leu	Tyr	Ala	Leu	Ala	Ala	Leu	Ala	Gly	Leu	Tyr	Leu	Glu	Ala	Ser	Pro	675	680	685
Ala	Leu	Ala	Val	Ala	Leu	Gly	Leu	Tyr	Val	Ala	Leu	Gly	Leu	Tyr	Ala	690	695	700
Leu	Ala	Ala	Ser	Pro	Ala	Arg	Gly	Pro	Arg	Ala	Leu	Ala	Ala	Leu	Ala			

[illegible]

<400> 155

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<210> 156
<211> 221
<212> PRT
<213> Mycobacterium vaccae
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<400> 156

62

Asp Ser Val Thr Thr Tyr Gly Ala Pro Trp Asn Met Asn  
 210 215 220

<210> 157  
 <211> 480  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 157

aacggctggg	acatcaacac	ccctgcgttc	gagtggttct	acgagtcagg	cttgctgacg	60
atcatgccgg	tggcgggaca	gtccagcttc	tacagcgact	ggtaccagcc	gtctcggggc	120
aacgggcaga	actacaccta	caagtgggag	acgttcctga	cccaggagct	gccgacgtgg	180
ctggaggcca	accgcggagt	gtcgcgcacc	ggcaacgcgt	tcgtcggcct	gtcgatggcg	240
ggcagcgagg	cgctgaccta	cgcgatccat	cacccgcagc	agttcatcta	cgcctcgctg	300
ctgtcaggct	tcctgaaccc	gtccgagggc	tggtggccga	tgctgatcgg	gctggcgatg	360
aacgacgcag	gcggtttcaa	cgccgagagc	atgtggggcc	cgctctcgga	cccggcggtg	420
aagcgcaacg	acccgatggg	caacatcaac	cagctggtgg	ccaacaacac	ccggatctgg	480

<210> 158  
 <211> 161  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 158

Asn	Gly	Trp	Asp	Ile	Asn	Thr	Pro	Ala	Phe	Glu	Trp	Phe	Tyr	Glu	Ser
1				5					10					15	
Gly	Leu	Ser	Thr	Ile	Met	Pro	Val	Gly	Gly	Gln	Ser	Ser	Phe	Tyr	Ser
			20					25					30		
Asp	Trp	Tyr	Gln	Pro	Ser	Arg	Gly	Asn	Gly	Gln	Asn	Tyr	Thr	Tyr	Lys
		35					40				45				
Trp	Glu	Thr	Phe	Leu	Thr	Gln	Glu	Leu	Pro	Thr	Trp	Leu	Glu	Ala	Asn
	50					55				60					
Arg	Gly	Val	Ser	Arg	Thr	Gly	Asn	Ala	Phe	Val	Gly	Leu	Ser	Met	Ala
65					70					75				80	
Gly	Ser	Ala	Ala	Leu	Thr	Tyr	Ala	Ile	His	His	Pro	Gln	Gln	Phe	Ile
				85					90					95	
Tyr	Ala	Ser	Ser	Leu	Ser	Gly	Phe	Leu	Asn	Pro	Ser	Glu	Gly	Trp	Trp
			100					105					110		
Pro	Met	Leu	Ile	Gly	Leu	Ala	Met	Asn	Asp	Ala	Gly	Gly	Phe	Asn	Ala
		115				120					125				
Glu	Ser	Met	Trp	Gly	Pro	Ser	Ser	Asp	Pro	Ala	Trp	Lys	Arg	Asn	Asp
	130					135				140					
Pro	Met	Val	Asn	Ile	Asn	Gln	Leu	Val	Ala	Asn	Asn	Thr	Arg	Ile	Trp
145					150					155					160
Ile															

<210> 159  
 <211> 1626  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 159

atggccaaga	caattgcgta	tgacgaagag	gcccgcctgtg	gcctcgagcg	gggcctcaac	60
gccctcgag	acgccgtaaa	ggtagcgttg	ggcccgaagg	gtcgcaacgt	cgtgctggag	120
aagaagtggg	gcgccccac	gatcaccaac	gatggtgtgt	ccatcgccaa	ggagatcgag	180
ctggaggacc	cgtacgagaa	gatcggcgct	gagctggtca	aagaggtcgc	caagaagacc	240

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gacgacgtcg cgggcgacgg caccaccacc gccaccgtgc tcgctcaggc tctggttcgc 300
gaaggcctgc gcaacgtcgc agccggcgcc aaccgcgtcg gcctcaagcg tggcatcgag 360
aaggctgtcg aggctgtcac ccagtcgctg ctgaagtcgg ccaaggaggt cgagaccaag 420
gagcagattt ctgccaccgc ggcgatttcc gccggcgaca cccagatcgg cgagctcatc 480
gccgaggcca tggacaaggt cggcaacgag ggtgtcatca ccgtcgagga gtcgaacacc 540
ttcggcctgc agctcgagct caccgagggt atgcgcttcg acaagggtta catctcgggt 600
tacttcgtga ccgacgccga gcgccaggaa gccgtcctgg aggatcccta catcctgctg 660
gtcagctcca aggtgtcgac cgtcaaggat ctgctcccg cgtctggagaa ggtcatccag 720
gccggcaagc cgtgtgtgat catcgccgag gacgtcgagg gcgaggccct gtccacgctg 780
gtggtcaaca agatccgcgg caccttcaag tccgtcgccg tcaaggctcc gggcttcggg 840
gaccgccgca aggcgatgct gcaggacatg gccatcctca ccggtggtca ggtcgtcagc 900
gaaagagtcg ggctgtccct ggagaccgcc gacgtctcgc tgcgtggcca gggccgcaag 960
gtcgtcgtca ccaaggacga gaccaccatc gtcgaggggt cgggcgattc cgatgccatc 1020
gccggccggg tggctcagat ccgcgccgag atcgagaaca gcgactccga ctacgaccgc 1080
gagaagctgc aggagcgctt ggccaagctg gccggcggtg ttgcggtgat caaggccgga 1140
gctgccaccg aggtggagct caaggagcgc aagcaccgca tcgaggacgc cgtccgcaac 1200
gcgaaggctg ccgtcgaaga gggcatcgtc gccgggtggcg gcgtggctct gctgcagtcg 1260
gtcctgcgc tggacgacct cggcctgacg ggcgacgagg ccaccggtgc caacatcgtc 1320
cgcgtggcgc tgcggctcc gctcaagcag atcgcttca acggcggcct ggagcccggc 1380
gtcgttgccg agaaggtgtc caacctgccc gcgggtcacg gcctcaacgc cgcgaccggt 1440
gagtacgagg acctgctcaa ggccggcgtc gccgaccggg tgaaggtcac ccgctcggcg 1500
ctgcagaacg cggcgtccat cgcggctctg ttccctacca ccgaggccgt cgtcgccgac 1560
aagccggaga aggcgtccgc acccgcgggc gaccgcaccg gtggcatggg cggtatggac 1620
ttctaa

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<210> 160  
 <211> 541  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 160

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Met Ala Lys Thr Ile Ala Tyr Asp Glu Glu Ala Arg Arg Gly Leu Glu
1      5      10      15
Arg Gly Leu Asn Ala Leu Ala Asp Ala Val Lys Val Thr Leu Gly Pro
20     25     30
Lys Gly Arg Asn Val Val Leu Glu Lys Lys Trp Gly Ala Pro Thr Ile
35     40     45
Thr Asn Asp Gly Val Ser Ile Ala Lys Glu Ile Glu Leu Glu Asp Pro
50     55     60
Tyr Glu Lys Ile Gly Ala Glu Leu Val Lys Glu Val Ala Lys Lys Thr
65     70     75     80
Asp Asp Val Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala Gln
85     90     95
Ala Leu Val Arg Glu Gly Leu Arg Asn Val Ala Ala Gly Ala Asn Pro
100    105    110
Leu Gly Leu Lys Arg Gly Ile Glu Lys Ala Val Glu Ala Val Thr Gln
115    120    125
Ser Leu Leu Lys Ser Ala Lys Glu Val Glu Thr Lys Glu Gln Ile Ser
130    135    140
Ala Thr Ala Ala Ile Ser Ala Gly Asp Thr Gln Ile Gly Glu Leu Ile
145    150    155    160
Ala Glu Ala Met Asp Lys Val Gly Asn Glu Gly Val Ile Thr Val Glu
165    170    175
Glu Ser Asn Thr Phe Gly Leu Gln Leu Glu Leu Thr Glu Gly Met Arg
180    185    190
Phe Asp Lys Gly Tyr Ile Ser Gly Tyr Phe Val Thr Asp Ala Glu Arg
195    200    205

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Gln Glu Ala Val Leu Glu Asp Pro Tyr Ile Leu Leu Val Ser Ser Lys  
 210 215 220  
 Val Ser Thr Val Lys Asp Leu Leu Pro Leu Leu Glu Lys Val Ile Gln  
 225 230 235 240  
 Ala Gly Lys Pro Leu Leu Ile Ile Ala Glu Asp Val Glu Gly Glu Ala  
 245 250 255  
 Leu Ser Thr Leu Val Val Asn Lys Ile Arg Gly Thr Phe Lys Ser Val  
 260 265 270  
 Ala Val Lys Ala Pro Gly Phe Gly Asp Arg Arg Lys Ala Met Leu Gln  
 275 280 285  
 Asp Met Ala Ile Leu Thr Gly Gly Gln Val Val Ser Glu Arg Val Gly  
 290 295 300  
 Leu Ser Leu Glu Thr Ala Asp Val Ser Leu Leu Gly Gln Ala Arg Lys  
 305 310 315 320  
 Val Val Val Thr Lys Asp Glu Thr Thr Ile Val Glu Gly Ser Gly Asp  
 325 330 335  
 Ser Asp Ala Ile Ala Gly Arg Val Ala Gln Ile Arg Ala Glu Ile Glu  
 340 345 350  
 Asn Ser Asp Ser Asp Tyr Asp Arg Glu Lys Leu Gln Glu Arg Leu Ala  
 355 360 365  
 Lys Leu Ala Gly Gly Val Ala Val Ile Lys Ala Gly Ala Ala Thr Glu  
 370 375 380  
 Val Glu Leu Lys Glu Arg Lys His Arg Ile Glu Asp Ala Val Arg Asn  
 385 390 395 400  
 Ala Lys Ala Ala Val Glu Glu Gly Ile Val Ala Gly Gly Gly Val Ala  
 405 410 415  
 Leu Leu Gln Ser Ala Pro Ala Leu Asp Asp Leu Gly Leu Thr Gly Asp  
 420 425 430  
 Glu Ala Thr Gly Ala Asn Ile Val Arg Val Ala Leu Ser Ala Pro Leu  
 435 440 445  
 Lys Gln Ile Ala Phe Asn Gly Gly Leu Glu Pro Gly Val Val Ala Glu  
 450 455 460  
 Lys Val Ser Asn Leu Pro Ala Gly His Gly Leu Asn Ala Ala Thr Gly  
 465 470 475 480  
 Glu Tyr Glu Asp Leu Leu Lys Ala Gly Val Ala Asp Pro Val Lys Val  
 485 490 495  
 Thr Arg Ser Ala Leu Gln Asn Ala Ala Ser Ile Ala Ala Leu Phe Leu  
 500 505 510  
 Thr Thr Glu Ala Val Val Ala Asp Lys Pro Glu Lys Ala Ser Ala Pro  
 515 520 525  
 Ala Gly Asp Pro Thr Gly Gly Met Gly Gly Met Asp Phe  
 530 535 540

<210> 161

<211> 985

<212> DNA

<213> Mycobacterium vaccae

<400> 161

ggatccctac atcctgctgg tcagctccaa ggtgtcgacc gtcaaggatc tgctcccgcg	60
gctggagaag gtcattccagg ccggcaagcc gctgctgatc atcgccgagg acgtcgaggg	120
cgaggccctg tccacgctgg tgggtcaacaa gatccgcggc accttcaagt ccgtcgccgt	180
caaggctccg ggcttcgggtg accgccgcaa ggcgatgctg caggacatgg ccatcctcac	240
cggtgggtcag gtcgtcagcg aaagagtcgg gctgtccctg gagaccgccg acgtctcgct	300
gctggggccag gccgcgaagg tcgtcgtcac caaggacgag accaccatcg tcgagggctc	360
gggagattcc gatgccatcg ccggccgggt ggctcagatc cgcgcgcgaga tcgagaacag	420
cgactccgac tacgaccgcg agaagctgca ggagcgcctg gccaaagctgg ccggcgggtgt	480

tgcggtgac	aaggccggag	ctgccaccga	ggtggagctc	aaggagcgca	agcaccgcat	540
cgaggacgcc	gtccgcaacg	cgaaggctgc	cgtcgaagag	ggcatcgtcg	ccggtggcgg	600
cgtggctctg	ctgcagtcgg	ctcctgcgct	ggacgacctc	ggcctgacgg	gcgacgaggc	660
caccggtgcc	aacatcgtcc	gcgtggcgct	gtcggctccg	ctcaagcaga	tcgccttcaa	720
cggcggcctg	gagccccggc	tcgttgccga	gaaggtgtcc	aacctgcccc	cgggtcacgg	780
cctcaacgcc	gcgaccggtg	agtacgagga	cctgctcaag	gccggcgctc	ccgaccgggt	840
gaaggtcacc	cgctcggcgc	tcgagaacgc	ggcgtccatc	gcggctctgt	tcctcaccac	900
cgaggccgtc	gtcgcgcgaca	agccggagaa	ggcgtccgca	cccgcggggc	acccgaccgg	960
tggcatgggc	ggtatggact	tctaa				985

<210> 162  
 <211> 327  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 162

Asp	Pro	Tyr	Ile	Leu	Leu	Val	Ser	Ser	Lys	Val	Ser	Thr	Val	Lys	Asp
1				5					10					15	
Leu	Leu	Pro	Leu	Leu	Glu	Lys	Val	Ile	Gln	Ala	Gly	Lys	Pro	Leu	Leu
			20					25					30		
Ile	Ile	Ala	Glu	Asp	Val	Glu	Gly	Glu	Ala	Leu	Ser	Thr	Leu	Val	Val
		35					40					45			
Asn	Lys	Ile	Arg	Gly	Thr	Phe	Lys	Ser	Val	Ala	Val	Lys	Ala	Pro	Gly
	50					55					60				
Phe	Gly	Asp	Arg	Arg	Lys	Ala	Met	Leu	Gln	Asp	Met	Ala	Ile	Leu	Thr
65					70				75					80	
Gly	Gly	Gln	Val	Val	Ser	Glu	Arg	Val	Gly	Leu	Ser	Leu	Glu	Thr	Ala
			85					90					95		
Asp	Val	Ser	Leu	Leu	Gly	Gln	Ala	Arg	Lys	Val	Val	Val	Thr	Lys	Asp
			100					105					110		
Glu	Thr	Thr	Ile	Val	Glu	Gly	Ser	Gly	Asp	Ser	Asp	Ala	Ile	Ala	Gly
		115					120					125			
Arg	Val	Ala	Gln	Ile	Arg	Ala	Glu	Ile	Glu	Asn	Ser	Asp	Ser	Asp	Tyr
	130					135					140				
Asp	Arg	Glu	Lys	Leu	Gln	Glu	Arg	Leu	Ala	Lys	Leu	Ala	Gly	Gly	Val
145					150					155					160
Ala	Val	Ile	Lys	Ala	Gly	Ala	Ala	Thr	Glu	Val	Glu	Leu	Lys	Glu	Arg
			165					170					175		
Lys	His	Arg	Ile	Glu	Asp	Ala	Val	Arg	Asn	Ala	Lys	Ala	Ala	Val	Glu
			180					185					190		
Glu	Gly	Ile	Val	Ala	Gly	Gly	Gly	Val	Ala	Leu	Leu	Gln	Ser	Ala	Pro
		195					200					205			
Ala	Leu	Asp	Asp	Leu	Gly	Leu	Thr	Gly	Asp	Glu	Ala	Thr	Gly	Ala	Asn
		210				215					220				
Ile	Val	Arg	Val	Ala	Leu	Ser	Ala	Pro	Leu	Lys	Gln	Ile	Ala	Phe	Asn
225					230					235					240
Gly	Gly	Leu	Glu	Pro	Gly	Val	Val	Ala	Glu	Lys	Val	Ser	Asn	Leu	Pro
			245					250					255		
Ala	Gly	His	Gly	Leu	Asn	Ala	Ala	Thr	Gly	Glu	Tyr	Glu	Asp	Leu	Leu
			260					265					270		
Lys	Ala	Gly	Val	Ala	Asp	Pro	Val	Lys	Val	Thr	Arg	Ser	Ala	Leu	Gln
		275					280					285			
Asn	Ala	Ala	Ser	Ile	Ala	Ala	Leu	Phe	Leu	Thr	Thr	Glu	Ala	Val	Val
		290				295					300				
Ala	Asp	Lys	Pro	Glu	Lys	Ala	Ser	Ala	Pro	Ala	Gly	Asp	Pro	Thr	Gly
305					310					315					320
Gly	Met	Gly	Gly	Met	Asp	Phe									

325

<210> 163  
<211> 403  
<212> DNA  
<213> Mycobacterium vaccae

<400> 163

ggatccgcgg caccggctgg tgacgaccaa gtacaaccgc gcccgcacct ggacggccga	60
gaactccgtc ggcacggcg gcgcgtacct gtgcatctac gggatggagg gccccggcgg	120
ctatcagttc gtcggccgca ccaccaggt gtggagtcgt taccgccaca cggcgccgtt	180
cgaaccggga agtccctggc tgctgcggtt ttctgaccga atttcgtggt atccggtgtc	240
ggccgaggag ctgctggaat tgcgagccga catggccgca ggccggggct cggtcgacat	300
caccgacggc gtgttctccc tcgccgagca cgaacgggtc ctggccgaca acgccgacga	360
catcgccgcg ttccgttccc ggcaggcggc cgcgttctcc gcc	403

<210> 164  
<211> 336  
<212> DNA  
<213> Mycobacterium vaccae

<400> 164

cggaccgcgt gggcggccgc cggcgagttc gaccgcgcgc agaaagccgc gtcgaaggcc	60
accgacgccg ataccgggga cctggtgctc tacgacgggtg cgagcgggtc gacgctccgt	120
tcgcgtcgag cgtgtggaag gtcgacgtcg ccgtcgggtga ccgggtggtg gccggacagc	180
cgttgctggc gctggaggcg atgaagatgg agaccgtgct gcgcgccccg gccgacgggg	240
tggtcaccga gatcctggtc tccgtgggc atctcgtcga tcccggcacc ccactggctg	300
tggtcggcac cggagtgcgc gcatgagcgc cgtcga	336

<210> 165  
<211> 134  
<212> PRT  
<213> Mycobacterium vaccae

<400> 165

Asp	Pro	Arg	His	Arg	Leu	Val	Thr	Thr	Lys	Tyr	Asn	Pro	Ala	Arg	Thr
1				5					10					15	
Trp	Thr	Ala	Glu	Asn	Ser	Val	Gly	Ile	Gly	Gly	Ala	Tyr	Leu	Cys	Ile
			20					25					30		
Tyr	Gly	Met	Glu	Gly	Pro	Gly	Gly	Tyr	Gln	Phe	Val	Gly	Arg	Thr	Thr
		35					40					45			
Gln	Val	Trp	Ser	Arg	Tyr	Arg	His	Thr	Ala	Pro	Phe	Glu	Pro	Gly	Ser
		50				55					60				
Pro	Trp	Leu	Leu	Arg	Phe	Phe	Asp	Arg	Ile	Ser	Trp	Tyr	Pro	Val	Ser
65				70					75					80	
Ala	Glu	Glu	Leu	Leu	Glu	Leu	Arg	Ala	Asp	Met	Ala	Ala	Gly	Arg	Gly
			85					90					95		
Ser	Val	Asp	Ile	Thr	Asp	Gly	Val	Phe	Ser	Leu	Ala	Glu	His	Glu	Arg
		100					105						110		
Phe	Leu	Ala	Asp	Asn	Ala	Asp	Asp	Ile	Ala	Ala	Phe	Arg	Ser	Arg	Gln
		115				120						125			
Ala	Ala	Ala	Phe	Ser	Ala										
130															

<210> 166  
<211> 108  
<212> PRT

<213> Mycobacterium vaccae

<400> 166

Arg Thr Ala Trp Ala Ala Ala Gly Glu Phe Asp Arg Ala Glu Lys Ala  
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Ala Ser Lys Ala Thr Asp Ala Asp Thr Gly Asp Leu Val Leu Tyr Asp  
20 25 30  
Gly Asp Glu Arg Val Asp Ala Pro Phe Ala Ser Ser Val Trp Lys Val  
35 40 45  
Asp Val Ala Val Gly Asp Arg Val Val Ala Gly Gln Pro Leu Leu Ala  
50 55 60  
Leu Glu Ala Met Lys Met Glu Thr Val Leu Arg Ala Pro Ala Asp Gly  
65 70 75 80  
Val Val Thr Gln Ile Leu Val Ser Ala Gly His Leu Val Asp Pro Gly  
85 90 95  
Thr Pro Leu Val Val Val Gly Thr Gly Val Arg Ala  
100 105

<210> 167

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 167

atagaattcg tccgacagtg ggacctcgag c

31

<210> 168

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Made in a lab

<400> 168

atagaattcc caccgcgtca gccgccg

27

<210> 169

<211> 1111

<212> DNA

<213> Mycobacterium vaccae

<400> 169

gtccgacagt	gggacctcga	gcaccacgtc	acaggacagc	ggccccgcca	gcggcgccct	60
gcgcgtctcc	aactggccgc	tctatatggc	cgacggtttc	atcgagcgt	tccagaccgc	120
ctcgggcac	acggtcgact	acaaagaaga	cttcaacgac	aacgagcagt	ggttcgccaa	180
ggccaaggag	ccgttgctgc	gcaagcagga	cataggcgcc	gacctggtga	tccccaccga	240
gttcattggc	gcgcgcgtca	agggcctggg	atggctcaat	gagatcagcg	aagccggcgt	300
gccaatcgc	aagaatctgc	gtcaggacct	gttgactcg	agcatcgacg	agggccgcaa	360
gttcaccgcg	ccgtacatga	ccggcatggt	cggtctcgcc	tacaacaagg	cagccaccgg	420
acgcgatatc	cgcaccatcg	acgacctctg	ggatcccgcg	ttcaagggcc	gcgtcagtct	480
gttctccgac	gtccaggacg	gcctcggcac	gatcatgctc	tcgcagggca	actcgccgga	540
gaatccgacc	accgagtcca	ttcagcaggc	ggtcgatctg	gtccgcgaac	agaacgacag	600
ggggtcagat	ccgtcgcttc	accggcaacg	actacgccga	cgacctggcc	gcagaaacat	660



cgccatcgcg caggcgtaact ccggtgacgt cgtgcagctg caggcggaca accccgatct 720  
gcagttcatc gttcccgaat ccggcggcga ctggttcgtc gacacgatgg tgatccccta 780  
caccacgcag aaccagaagg ccgccgaggc gtggatcgac tacatctacg accgagccaa 840  
ctacgccaag ctggtcgcgt tcacccagtt cgtgcccgca ctctcggaca tgaccgacga 900  
actcgccaag gtcgatcctg catcggcgga gaaccgcgtg atcaaccctg cggccgaggt 960  
gcaggcgaac ctgaagtcgt gggcggcact gaccgacgag cagacgcagg agttcaacac 1020  
tgcgtacgcc gccgtcaccg gcggctgacg cggtggtagt gccgatgcga ggggcataaa 1080  
tggccctgcg gacgcgagga gcataaatgg c 1111

<210> 170

<211> 348

<212> PRT

<213> Mycobacterium vaccae

<400> 170

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Ser Gly Ala Leu Arg Val Ser Asn Trp Pro Leu Tyr Met Ala Asp Gly  
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Phe Ile Ala Ala Phe Gln Thr Ala Ser Gly Ile Thr Val Asp Tyr Lys  
35 40 45  
Glu Asp Phe Asn Asp Asn Glu Gln Trp Phe Ala Lys Val Lys Glu Pro  
50 55 60  
Leu Ser Arg Lys Gln Asp Ile Gly Ala Asp Leu Val Ile Pro Thr Glu  
65 70 75 80  
Phe Met Ala Ala Arg Val Lys Gly Leu Gly Trp Leu Asn Glu Ile Ser  
85 90 95  
Glu Ala Gly Val Pro Asn Arg Lys Asn Leu Arg Gln Asp Leu Leu Asp  
100 105 110  
Ser Ser Ile Asp Glu Gly Arg Lys Phe Thr Ala Pro Tyr Met Thr Gly  
115 120 125  
Met Val Gly Leu Ala Tyr Asn Lys Ala Ala Thr Gly Arg Asp Ile Arg  
130 135 140  
Thr Ile Asp Asp Leu Trp Asp Pro Ala Phe Lys Gly Arg Val Ser Leu  
145 150 155 160  
Phe Ser Asp Val Gln Asp Gly Leu Gly Met Ile Met Leu Ser Gln Gly  
165 170 175  
Asn Ser Pro Glu Asn Pro Thr Thr Glu Ser Ile Gln Gln Ala Val Asp  
180 185 190  
Leu Val Arg Glu Gln Asn Asp Arg Gly Gln Ile Arg Arg Phe Thr Gly  
195 200 205  
Asn Asp Tyr Ala Asp Asp Leu Ala Ala Gly Asn Ile Ala Ile Ala Gln  
210 215 220  
Ala Tyr Ser Gly Asp Val Val Gln Leu Gln Ala Asp Asn Pro Asp Leu  
225 230 235 240  
Gln Phe Ile Val Pro Glu Ser Gly Gly Asp Trp Phe Val Asp Thr Met  
245 250 255  
Val Ile Pro Tyr Thr Thr Gln Asn Gln Lys Ala Ala Glu Ala Trp Ile  
260 265 270  
Asp Tyr Ile Tyr Asp Arg Ala Asn Tyr Ala Lys Leu Val Ala Phe Thr  
275 280 285  
Gln Phe Val Pro Ala Leu Ser Asp Met Thr Asp Glu Leu Ala Lys Val  
290 295 300  
Asp Pro Ala Ser Ala Glu Asn Pro Leu Ile Asn Pro Ser Ala Glu Val  
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Gln Ala Asn Leu Lys Ser Trp Ala Ala Leu Thr Asp Glu Gln Thr Gln  
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Glu Phe Asn Thr Ala Tyr Ala Ala Val Thr Gly Gly  
340 345

<210> 171  
<211> 1420  
<212> DNA  
<213> Mycobacterium vaccae

<220>  
<221> unsure  
<222> (955)...(955)

<221> unsure  
<222> (973)...(973)

<400> 171

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gctggcccgc	cgggtgcaac	tcctgcgtac	ctacatcctg	ccgctgggcg	cgttgctgct	180
cctgctggta	caggcgatgg	agatctccga	cgacgccacg	tcggtacggg	tggtcgccac	240
cctgttcggc	gtcgtgttgt	tgacgttggt	gctgtccggg	ctcaacgccca	ccctcatcca	300
gggcgcacca	gaagacagct	ggcgcaggcg	gattccgtcg	atcttcctcg	acgtcgcgcg	360
cttcgcgctg	atcgcggctg	gtatcaccgt	gatcatggcc	tatgtctggg	gcgcgaacgt	420
ggggggcctg	ttcaccgcac	tgggcgtcac	ttccatcggt	cttggcctgg	ctctgcagaa	480
ttcgtcggt	cagatcatct	cgggtctgct	gctgctgttc	gagcaaccgt	tccggctcgg	540
cgactggatc	accgtcccca	ccgcggcggg	ccggccgtcc	gcccacggcc	gcgtggtgga	600
agtcaactgg	cgtgcaacac	atatcgacac	cggcggcaac	ctgctggtaa	tgcccaacgc	660
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cgctcgtcacc	accttcaacg	ccgcggacac	ccccgatgat	gtctgcgaga	tgctgtcgtc	780
ggtcgcggcg	tcgctgcccg	aactgcgcac	cgacggacag	atcgccacgc	tctatctcgg	840
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cgctgcgcgac	ganttcgaca	cgccggaacg	gatcgccctg	gccatgcggg	ctgtggcgctc	1020
cacactgcgc	ttggcagacg	acgaacagca	ggagatcgcc	gacgtggtgc	gtctgggtccg	1080
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cgtagacggc	aggggtgagtc	tgtccgtgat	cgatcaggac	ggcgacgtga	tcccggcgcg	1200
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gaccgcgcac	gcgctggagg	aagtaccctg	gctggagatg	gcccgtgacg	agatcgagcg	1320
cctggtgcac	cgaaagccga	tcctgctgca	cgtgatcggg	gccgtgatcg	ccgaccggcg	1380
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<210> 172  
<211> 471  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
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<221> UNSURE  
<222> (324)...(324)

<400> 172

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Ala	Leu	Arg	Arg	Arg	Gly	Ser		Ala	Leu	Ala	Arg	Pro	Val	Gln	Leu	Leu				
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Arg	Thr	Tyr	Ile	Leu	Pro	Leu	Gly	Ala	Leu	Leu	Leu	Leu	Leu	Leu	Val	Gln				
	50					55						60								
Ala	Met	Glu	Ile	Ser	Asp	Asp	Ala	Thr	Ser	Val	Arg	Leu	Val	Ala	Thr					
65					70					75				80						
Leu	Phe	Gly	Val	Val	Leu	Leu	Thr	Leu	Val	Leu	Ser	Gly	Leu	Asn	Ala					
				85					90					95						
Thr	Leu	Ile	Gln	Gly	Ala	Pro	Glu	Asp	Ser	Trp	Arg	Arg	Arg	Arg	Ile	Pro				
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Ser	Ile	Phe	Leu	Asp	Val	Ala	Arg	Phe	Ala	Leu	Ile	Ala	Val	Gly	Ile					
		115					120					125								
Thr	Val	Ile	Met	Ala	Tyr	Val	Trp	Gly	Ala	Asn	Val	Gly	Gly	Leu	Phe					
	130					135					140									
Thr	Ala	Leu	Gly	Val	Thr	Ser	Ile	Val	Leu	Gly	Leu	Ala	Leu	Gln	Asn					
145					150					155				160						
Ser	Val	Gly	Gln	Ile	Ile	Ser	Gly	Leu	Leu	Leu	Leu	Phe	Glu	Gln	Pro					
				165				170						175						
Phe	Arg	Leu	Gly	Asp	Trp	Ile	Thr	Val	Pro	Thr	Ala	Ala	Gly	Arg	Pro					
			180					185					190							
Ser	Ala	His	Gly	Arg	Val	Val	Glu	Val	Asn	Trp	Arg	Ala	Thr	His	Ile					
		195					200					205								
Asp	Thr	Gly	Gly	Asn	Leu	Leu	Val	Met	Pro	Asn	Ala	Glu	Leu	Ala	Gly					
	210					215					220									
Ala	Ser	Phe	Thr	Asn	Tyr	Ser	Arg	Pro	Val	Gly	Glu	His	Arg	Leu	Thr					
225					230					235				240						
Val	Val	Thr	Thr	Phe	Asn	Ala	Ala	Asp	Thr	Pro	Asp	Asp	Val	Cys	Glu					
				245					250					255						
Met	Leu	Ser	Ser	Val	Ala	Ala	Ser	Leu	Pro	Glu	Leu	Arg	Thr	Asp	Gly					
			260					265					270							
Gln	Ile	Ala	Thr	Leu	Tyr	Leu	Gly	Ala	Ala	Glu	Tyr	Glu	Lys	Ser	Ile					
		275					280					285								
Pro	Leu	His	Thr	Pro	Ala	Val	Asp	Asp	Ser	Val	Arg	Ser	Thr	Tyr	Leu					
	290					295					300									
Arg	Trp	Val	Trp	Tyr	Ala	Ala	Arg	Arg	Gln	Glu	Leu	Arg	Xaa	Asn	Gly					
305					310					315				320						
Val	Ala	Asp	Xaa	Phe	Asp	Thr	Pro	Glu	Arg	Ile	Ala	Ser	Ala	Met	Arg					
				325					330					335						
Ala	Val	Ala	Ser	Thr	Leu	Arg	Leu	Ala	Asp	Asp	Glu	Gln	Gln	Glu	Ile					
			340					345					350							
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<210> 173  
 <211> 2172  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 173

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tcgctgcgcg	catcggtggt	cgaccgcctc	accgacatcc	gcgagtcgca	gtcgcgcggg	240
ttggagaatc	agttcgcgga	cctgaagaac	tcgatgggtga	tttactcgcg	cggcagcaact	300
gccacggagg	cgatcggcgc	gttcagcgac	ggtttcgcgc	agctcggcga	tgcgacgac	360
aatacggggc	aggcggcgctc	attgcgcgct	tactacgacc	ggacgttcgc	caacaccacc	420
ctcgacgaca	gcggaaacccg	cgtcgacgctc	cgcgcgctca	tcccgaacac	caacccccag	480
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cggatcaacg	aattgatgac	ggcgcgggga	cagtggcggtg	acaccgggat	gggagacacc	960
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gagaaccggg	agaagttcct	ggccgacgctc	gtcgaggggg	gaaccccgcc	ggaggtcgcc	1080
gacgaatcgg	ttgaccgccc	cggcaccacg	ctgggtgcagc	cgggtgaccac	ccgctccgctc	1140
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gcgatcgaaa	tggaccgcat	catcgaccgg	cacgcgcgcg	agtccgggca	cgacctgcgg	1920
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gcgtacgaca	tgtgggggttc	ggcggtcgat	gtcgctaacc	aggtgcagcg	cggctcccc	2040
cagcccggca	tctacgtcac	ctcgcgggtg	cacgaggtca	tgaggaaac	tctcgacttc	2100
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<210> 174  
 <211> 722  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 174

Met	Thr	Ile	Leu	Pro	Trp	Asn	Ala	Arg	Thr	Ser	Glu	His	Pro	Thr	Arg
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Lys	Arg	Arg	Gly	Arg	Tyr	His	Leu	Leu	Ser	Arg	Met	Ser	Ile	Gln	Ser
			20					25					30		
Lys	Leu	Leu	Leu	Met	Leu	Leu	Leu	Thr	Ser	Ile	Leu	Ser	Ala	Ala	Val
	35						40						45		

Val	Gly	Phe	Ile	Gly	Tyr	Gln	Ser	Gly	Arg	Ser	Ser	Leu	Arg	Ala	Ser	50	55	60
Val	Phe	Asp	Arg	Leu	Thr	Asp	Ile	Arg	Glu	Ser	Gln	Ser	Arg	Gly	Leu	65	70	75
Glu	Asn	Gln	Phe	Ala	Asp	Leu	Lys	Asn	Ser	Met	Val	Ile	Tyr	Ser	Arg	85	90	95
Gly	Ser	Thr	Ala	Thr	Glu	Ala	Ile	Gly	Ala	Phe	Ser	Asp	Gly	Phe	Arg	100	105	110
Gln	Leu	Gly	Asp	Ala	Thr	Ile	Asn	Thr	Gly	Gln	Ala	Ala	Ser	Leu	Arg	115	120	125
Arg	Tyr	Thr	Asp	Arg	Thr	Phe	Ala	Asn	Thr	Thr	Leu	Asp	Asp	Ser	Gly	130	135	140
Asn	Arg	Val	Asp	Val	Arg	Ala	Leu	Ile	Pro	Lys	Ser	Asn	Pro	Gln	Arg	145	150	155
Tyr	Leu	Gln	Ala	Leu	Tyr	Thr	Pro	Pro	Phe	Gln	Asn	Trp	Glu	Lys	Ala	165	170	175
Ile	Ala	Phe	Asp	Asp	Ala	Arg	Asp	Gly	Ser	Ala	Trp	Ser	Ala	Ala	Asn	180	185	190
Ala	Arg	Phe	Asn	Glu	Phe	Phe	Arg	Glu	Ile	Val	His	Arg	Phe	Asn	Phe	195	200	205
Glu	Asp	Leu	Met	Leu	Leu	Asp	Leu	Glu	Gly	Asn	Val	Val	Tyr	Ser	Ala	210	215	220
Tyr	Lys	Gly	Pro	Asp	Leu	Gly	Thr	Asn	Ile	Val	Asn	Gly	Pro	Tyr	Arg	225	230	235
Asn	Arg	Glu	Leu	Ser	Glu	Ala	Tyr	Glu	Lys	Ala	Val	Ala	Ser	Asn	Ser	245	250	255
Ile	Asp	Tyr	Val	Gly	Val	Thr	Asp	Phe	Gly	Trp	Tyr	Leu	Pro	Ala	Glu	260	265	270
Glu	Pro	Thr	Ala	Trp	Phe	Leu	Ser	Pro	Val	Gly	Leu	Lys	Asp	Arg	Val	275	280	285
Asp	Gly	Val	Met	Ala	Val	Gln	Phe	Pro	Ile	Ala	Arg	Ile	Asn	Glu	Leu	290	295	300
Met	Thr	Ala	Arg	Gly	Gln	Trp	Arg	Asp	Thr	Gly	Met	Gly	Asp	Thr	Gly	305	310	315
Glu	Thr	Ile	Leu	Val	Gly	Pro	Asp	Asn	Leu	Met	Arg	Ser	Asp	Ser	Arg	325	330	335
Leu	Phe	Arg	Glu	Asn	Arg	Glu	Lys	Phe	Leu	Ala	Asp	Val	Val	Glu	Gly	340	345	350
Gly	Thr	Pro	Pro	Glu	Val	Ala	Asp	Glu	Ser	Val	Asp	Arg	Arg	Gly	Thr	355	360	365
Thr	Leu	Val	Gln	Pro	Val	Thr	Thr	Arg	Ser	Val	Glu	Glu	Ala	Gln	Arg	370	375	380
Gly	Asn	Thr	Gly	Thr	Thr	Ile	Glu	Asp	Asp	Tyr	Leu	Gly	His	Glu	Ala	385	390	395
Leu	Gln	Ala	Tyr	Ser	Pro	Val	Asp	Leu	Pro	Gly	Leu	His	Trp	Val	Ile	405	410	415
Val	Ala	Lys	Ile	Asp	Thr	Asp	Glu	Ala	Phe	Ala	Pro	Val	Ala	Gln	Phe	420	425	430
Thr	Arg	Thr	Leu	Val	Leu	Ser	Thr	Val	Ile	Ile	Ile	Phe	Gly	Val	Ser	435	440	445
Leu	Ala	Ala	Met	Leu	Leu	Ala	Arg	Leu	Phe	Val	Arg	Pro	Ile	Arg	Arg	450	455	460
Leu	Gln	Ala	Gly	Ala	Gln	Gln	Ile	Ser	Gly	Gly	Asp	Tyr	Arg	Leu	Ala	465	470	475
Leu	Pro	Val	Leu	Ser	Arg	Asp	Glu	Phe	Gly	Asp	Leu	Thr	Thr	Ala	Phe	485	490	495
Asn	Asp	Met	Ser	Arg	Asn	Leu	Ser	Ile	Lys	Asp	Glu	Leu	Leu	Gly	Glu			



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<211> 297
<212> PRT
<213> Mycobacterium vaccae
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<221> UNSURE
<222> (151) ... (151)
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Val Cys Glu Met Leu Ser Ser Val Ala Ala Ser Leu Pro Glu Leu Arg  
85 90 95  
Thr Asp Gly Gln Ile Ala Thr Leu Tyr Leu Gly Ala Ala Glu Tyr Glu  
100 105 110  
Lys Ser Ile Pro Leu His Thr Pro Ala Val Asp Asp Ser Val Arg Ser  
115 120 125  
Thr Tyr Leu Arg Trp Val Trp Tyr Ala Ala Arg Arg Gln Glu Leu Arg  
130 135 140  
Xaa Asn Gly Val Ala Asp Xaa Phe Asp Thr Pro Glu Arg Ile Ala Ser  
145 150 155 160  
Ala Met Arg Ala Val Ala Ser Thr Leu Arg Leu Ala Asp Asp Glu Gln  
165 170 175  
Gln Glu Ile Ala Asp Val Val Arg Leu Val Arg Tyr Gly Asn Gly Glu  
180 185 190  
Arg Leu Gln Gln Pro Gly Gln Val Pro Thr Gly Met Arg Phe Ile Val  
195 200 205  
Asp Gly Arg Val Ser Leu Ser Val Ile Asp Gln Asp Gly Asp Val Ile  
210 215 220  
Pro Ala Arg Val Leu Glu Arg Gly Asp Phe Leu Gly Gln Thr Thr Leu  
225 230 235 240  
Thr Arg Glu Pro Val Leu Ala Thr Ala His Ala Leu Glu Glu Val Thr  
245 250 255  
Val Leu Glu Met Ala Arg Asp Glu Ile Glu Arg Leu Val His Arg Lys  
260 265 270  
Pro Ile Leu Leu His Val Ile Gly Ala Val Ala Asp Arg Arg Ala His  
275 280 285  
Glu Leu Arg Leu Met Asp Ser Gln Asp  
290 295

<210> 178

<211> 670

<212> PRT

<213> Mycobacterium vaccae

<400> 178

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Ala Asp Leu Lys Asn Ser Met Val Ile Tyr Ser Arg Gly Ser Thr Ala  
35 40 45  
Thr Glu Ala Ile Gly Ala Phe Ser Asp Gly Phe Arg Gln Leu Gly Asp  
50 55 60  
Ala Thr Ile Asn Thr Gly Gln Ala Ala Ser Leu Arg Arg Tyr Tyr Asp  
65 70 75 80  
Arg Thr Phe Ala Asn Thr Thr Leu Asp Asp Ser Gly Asn Arg Val Asp  
85 90 95  
Val Arg Ala Leu Ile Pro Lys Ser Asn Pro Gln Arg Tyr Leu Gln Ala  
100 105 110  
Leu Tyr Thr Pro Pro Phe Gln Asn Trp Glu Lys Ala Ile Ala Phe Asp  
115 120 125  
Asp Ala Arg Asp Gly Ser Ala Trp Ser Ala Ala Asn Ala Arg Phe Asn  
130 135 140  
Glu Phe Phe Arg Glu Ile Val His Arg Phe Asn Phe Glu Asp Leu Met  
145 150 155 160



Leu	Leu	Asp	Leu	Glu	Gly	Asn	Val	Val	Tyr	Ser	Ala	Tyr	Lys	Gly	Pro
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Asp	Leu	Gly	Thr	Asn	Ile	Val	Asn	Gly	Pro	Tyr	Arg	Asn	Arg	Glu	Leu
			180					185					190		
Ser	Glu	Ala	Tyr	Glu	Lys	Ala	Val	Ala	Ser	Asn	Ser	Ile	Asp	Tyr	Val
		195					200					205			
Gly	Val	Thr	Asp	Phe	Gly	Trp	Tyr	Leu	Pro	Ala	Glu	Glu	Pro	Thr	Ala
		210				215						220			
Trp	Phe	Leu	Ser	Pro	Val	Gly	Leu	Lys	Asp	Arg	Val	Asp	Gly	Val	Met
225					230					235					240
Ala	Val	Gln	Phe	Pro	Ile	Ala	Arg	Ile	Asn	Glu	Leu	Met	Thr	Ala	Arg
				245					250					255	
Gly	Gln	Trp	Arg	Asp	Thr	Gly	Met	Gly	Asp	Thr	Gly	Glu	Thr	Ile	Leu
		260						265					270		
Val	Gly	Pro	Asp	Asn	Leu	Met	Arg	Ser	Asp	Ser	Arg	Leu	Phe	Arg	Glu
		275					280					285			
Asn	Arg	Glu	Lys	Phe	Leu	Ala	Asp	Val	Val	Glu	Gly	Gly	Thr	Pro	Pro
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Glu	Val	Ala	Asp	Glu	Ser	Val	Asp	Arg	Arg	Gly	Thr	Thr	Leu	Val	Gln
305					310					315					320
Pro	Val	Thr	Thr	Arg	Ser	Val	Glu	Glu	Ala	Gln	Arg	Gly	Asn	Thr	Gly
				325					330					335	
Thr	Thr	Ile	Glu	Asp	Asp	Tyr	Leu	Gly	His	Glu	Ala	Leu	Gln	Ala	Tyr
		340						345					350		
Ser	Pro	Val	Asp	Leu	Pro	Gly	Leu	His	Trp	Val	Ile	Val	Ala	Lys	Ile
		355					360					365			
Asp	Thr	Asp	Glu	Ala	Phe	Ala	Pro	Val	Ala	Gln	Phe	Thr	Arg	Thr	Leu
		370				375					380				
Val	Leu	Ser	Thr	Val	Ile	Ile	Ile	Phe	Gly	Val	Ser	Leu	Ala	Ala	Met
385					390					395					400
Leu	Leu	Ala	Arg	Leu	Phe	Val	Arg	Pro	Ile	Arg	Arg	Leu	Gln	Ala	Gly
				405					410					415	
Ala	Gln	Gln	Ile	Ser	Gly	Gly	Asp	Tyr	Arg	Leu	Ala	Leu	Pro	Val	Leu
			420					425					430		
Ser	Arg	Asp	Glu	Phe	Gly	Asp	Leu	Thr	Thr	Ala	Phe	Asn	Asp	Met	Ser
		435					440					445			
Arg	Asn	Leu	Ser	Ile	Lys	Asp	Glu	Leu	Leu	Gly	Glu	Glu	Arg	Ala	Glu
		450				455					460				
Asn	Gln	Arg	Leu	Met	Leu	Ser	Leu	Met	Pro	Glu	Pro	Val	Met	Gln	Arg
465					470					475					480
Tyr	Leu	Asp	Gly	Glu	Glu	Thr	Ile	Ala	Gln	Asp	His	Lys	Asn	Val	Thr
			485						490					495	
Val	Ile	Phe	Ala	Asp	Met	Met	Gly	Leu	Asp	Glu	Leu	Ser	Arg	Met	Leu
			500					505					510		
Thr	Ser	Glu	Glu	Leu	Met	Val	Val	Val	Asn	Asp	Leu	Thr	Arg	Gln	Phe
		515					520						525		
Asp	Ala	Ala	Ala	Glu	Ser	Leu	Gly	Val	Asp	His	Val	Arg	Thr	Leu	His
		530				535					540				
Asp	Gly	Tyr	Leu	Ala	Ser	Cys	Gly	Leu	Gly	Val	Pro	Arg	Leu	Asp	Asn
545					550					555					560
Val	Arg	Arg	Thr	Val	Asn	Phe	Ala	Ile	Glu	Met	Asp	Arg	Ile	Ile	Asp
			565						570					575	
Arg	His	Ala	Ala	Glu	Ser	Gly	His	Asp	Leu	Arg	Leu	Arg	Ala	Gly	Ile
			580					585					590		
Asp	Thr	Gly	Ser	Ala	Ala	Ser	Gly	Leu	Val	Gly	Arg	Ser	Thr	Leu	Ala
		595					600					605			
Tyr	Asp	Met	Trp	Gly	Ser	Ala	Val	Asp	Val	Ala	Asn	Gln	Val	Gln	Arg

610 615 620  
 Gly Ser Pro Gln Pro Gly Ile Tyr Val Thr Ser Arg Val His Glu Val  
 625 630 635 640  
 Met Gln Glu Thr Leu Asp Phe Val Ala Ala Gly Glu Val Val Gly Glu  
 645 650 655  
 Arg Gly Val Glu Thr Val Trp Arg Leu Gln Gly His Arg Arg  
 660 665 670

<210> 179  
 <211> 520  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 179  
 gtgatcgacg aaaccctctt ccatgccgag gagaagatgg agaaggccgt ctcggtggca 60  
 cccgacgacc tggcgctgat tcgtaccggc cgcgcgaacc ccggcatgtt caaccggatc 120  
 aacatcgact actacggcgc ctccaccccg atcacgcagc tgtccagcat caacgtgccc 180  
 gaggcgcgca tgggtggtgat caagccctac gaggcgagcc agctgcgcct catcgaggat 240  
 gcgatccgca actccgacct cggcgctcaat ccgaccaacg acggcaacat catccgggtg 300  
 tcgatcccg cagtcaccga ggagcgccgc cgcgacctgg tcaagcaggc caaggccaag 360  
 ggcgaggacg ccaaggtgtc ggtgcgcaac atccgtcgca acgatatgaa caccttgcgc 420  
 atcgaccggg tacggctgcc gacgccaccg ccgtcgtaga agcgacagag gatcgcagggt 480  
 aacggtattg gccacgcctt ctgtggcggg ccgacaccac 520

<210> 180  
 <211> 1071  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 180  
 cgtggggaag gattgcactc tatgagcgaa atcgcccgtc cctggcgggt tctggcagggt 60  
 ggcacgcggt cctgcgcgcg gggatccgcc ggggtgctga gcacgcggt caccacggcg 120  
 tcggcccagc cgggcctccc gcagcccccg ctgcccgcgc ctgccacagt gacgcaaacc 180  
 gtcacgggtt cgcccacacg cgcgccacaa ctcatccgcg gcccgggtgt gacgcctgcc 240  
 accggcgggc ccgcgcgggt gccgcgcggg gtgagcgccc cggcggtcgc gccggccccc 300  
 gcgctgcccg cccgcgcggg gtccacgata gcccgggcca cctcgggcac gctcagcgag 360  
 ttcttcgccg ccaagggcgt cacgatggag ccgcagtgca gccgcgactt ccgcgccttc 420  
 aacatcgtgc tgccgaagcc gcggggctgg gagcacatcc cggaccgaa cgtgccggac 480  
 gcgttcgcgg tgctggccga ccgggtcggc ggcaacggcc tgtactcgtc gaacgccag 540  
 gtggtggtct acaaactcgt cggcgagttc gaccccaagg aagcgatcag ccacggcttc 600  
 gtcgacagcc agaagctgcc ggcgtggcgt tccaccgacg cgtcgctggc cgaacttcggc 660  
 ggaatgccgt cctcgctgat cgagggcacc taccgcgaga acaacatgaa gctgaacacg 720  
 tcccggcgcc acgtcattgc caccgcgggg cccgaccact acctggtgtc gctgtcggtg 780  
 accaccagcg tcgaacaggc cgtggccgaa gccgcggagg ccaccgacgc gattgtcaac 840  
 ggcttcaagg tcagcgttcc ggggtccgggt ccggccgcac cgccacctgc acccggtgcc 900  
 cccggtgtcc cgcgcgcgcc cggcgccccg gcgctgccgc tggccgtcgc accacccccg 960  
 gctcccgtg ttcccgcgt ggcgccccgc ccacagctgc tgggactgca gggatagacg 1020  
 tcgtcgtccc ccgggcgaag cctggcgccc gggggacgac ggcccccttc t 1071

<210> 181  
 <211> 152  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 181  
 Val Ile Asp Glu Thr Leu Phe His Ala Glu Glu Lys Met Glu Lys Ala  
 1 5 10 15

Val Ser Val Ala Pro Asp Asp Leu Ala Ser Ile Arg Thr Gly Arg Ala  
 20 25 30  
 Asn Pro Gly Met Phe Asn Arg Ile Asn Ile Asp Tyr Tyr Gly Ala Ser  
 35 40 45  
 Thr Pro Ile Thr Gln Leu Ser Ser Ile Asn Val Pro Glu Ala Arg Met  
 50 55 60  
 Val Val Ile Lys Pro Tyr Glu Ala Ser Gln Leu Arg Leu Ile Glu Asp  
 65 70 75 80  
 Ala Ile Arg Asn Ser Asp Leu Gly Val Asn Pro Thr Asn Asp Gly Asn  
 85 90 95  
 Ile Ile Arg Val Ser Ile Pro Gln Leu Thr Glu Glu Arg Arg Arg Asp  
 100 105 110  
 Leu Val Lys Gln Ala Lys Ala Lys Gly Glu Asp Ala Lys Val Ser Val  
 115 120 125  
 Arg Asn Ile Arg Arg Asn Asp Met Asn Thr Phe Arg Ile Ala Pro Val  
 130 135 140  
 Arg Leu Pro Thr Pro Pro Pro Ser  
 145 150

<210> 182  
 <211> 331  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 182  
 Met Ser Glu Ile Ala Arg Pro Trp Arg Val Leu Ala Gly Gly Ile Gly  
 1 5 10 15  
 Ala Cys Ala Ala Gly Ile Ala Gly Val Leu Ser Ile Ala Val Thr Thr  
 20 25 30  
 Ala Ser Ala Gln Pro Gly Leu Pro Gln Pro Pro Leu Pro Ala Pro Ala  
 35 40 45  
 Thr Val Thr Gln Thr Val Thr Val Ala Pro Asn Ala Ala Pro Gln Leu  
 50 55 60  
 Ile Pro Arg Pro Gly Val Thr Pro Ala Thr Gly Gly Ala Ala Ala Val  
 65 70 75 80  
 Pro Ala Gly Val Ser Ala Pro Ala Val Ala Pro Ala Pro Ala Leu Pro  
 85 90 95  
 Ala Arg Pro Val Ser Thr Ile Ala Pro Ala Thr Ser Gly Thr Leu Ser  
 100 105 110  
 Glu Phe Phe Ala Ala Lys Gly Val Thr Met Glu Pro Gln Ser Ser Arg  
 115 120 125  
 Asp Phe Arg Ala Leu Asn Ile Val Leu Pro Lys Pro Arg Gly Trp Glu  
 130 135 140  
 His Ile Pro Asp Pro Asn Val Pro Asp Ala Phe Ala Val Leu Ala Asp  
 145 150 155 160  
 Arg Val Gly Gly Asn Gly Leu Tyr Ser Ser Asn Ala Gln Val Val Val  
 165 170 175  
 Tyr Lys Leu Val Gly Glu Phe Asp Pro Lys Glu Ala Ile Ser His Gly  
 180 185 190  
 Phe Val Asp Ser Gln Lys Leu Pro Ala Trp Arg Ser Thr Asp Ala Ser  
 195 200 205  
 Leu Ala Asp Phe Gly Gly Met Pro Ser Ser Leu Ile Glu Gly Thr Tyr  
 210 215 220  
 Arg Glu Asn Asn Met Lys Leu Asn Thr Ser Arg Arg His Val Ile Ala  
 225 230 235 240  
 Thr Ala Gly Pro Asp His Tyr Leu Val Ser Leu Ser Val Thr Thr Ser  
 245 250 255

Val Glu Gln Ala Val Ala Glu Ala Ala Glu Ala Thr Asp Ala Ile Val  
 260 265 270  
 Asn Gly Phe Lys Val Ser Val Pro Gly Pro Gly Pro Ala Ala Pro Pro  
 275 280 285  
 Pro Ala Pro Gly Ala Pro Gly Val Pro Pro Ala Pro Gly Ala Pro Ala  
 290 295 300  
 Leu Pro Leu Ala Val Ala Pro Pro Pro Ala Pro Ala Val Pro Ala Val  
 305 310 315 320  
 Ala Pro Ala Pro Gln Leu Leu Gly Leu Gln Gly  
 325 330

<210> 183  
 <211> 207  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 183  
 acctacgagt tcgagaacaa ggtcacgggc ggccgcacatcc cgcgcgagta catcccgtcg 60  
 gtggatgccg gcgcgcagga cgccatgcag tacggcgtgc tggccggcta cccgctgggt 120  
 aacgtcaagc tgacgtctgct cgacgggtgcc taccacgaag tcgactcgtc ggaaatggca 180  
 ttcaagggtg ccggctccca ggtcata 207

<210> 184  
 <211> 69  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 184  
 Thr Tyr Glu Phe Glu Asn Lys Val Thr Gly Gly Arg Ile Pro Arg Glu  
 1 5 10 15  
 Tyr Ile Pro Ser Val Asp Ala Gly Ala Gln Asp Ala Met Gln Tyr Gly  
 20 25 30  
 Val Leu Ala Gly Tyr Pro Leu Val Asn Val Lys Leu Thr Leu Leu Asp  
 35 40 45  
 Gly Ala Tyr His Glu Val Asp Ser Ser Glu Met Ala Phe Lys Val Ala  
 50 55 60  
 Gly Ser Gln Val Ile  
 65

<210> 185  
 <211> 898  
 <212> DNA  
 <213> Mycobacterium vaccae

<220>  
 <221> unsure  
 <222> (637)...(637)  
 <221> unsure  
 <222> (662)...(662)

<400> 185  
 cgacctccac ccgggcgtga ggccaaccac taggctgggtc accagtagtc gacggcacac 60  
 ttcaccgaaa aaatgaggac agaggagaca cccgtgacga tccgtgttgg tgtgaacggc 120  
 ttcggccgta tcggacgcaa cttcttccgc gcgctggacg cgcagaaggc cgaaggcaag 180  
 aacaaggaca tcgagatcgt cgcgggtcaac gacctcaccg acaacgccac gctggcgcac 240  
 ctgctgaagt tcgactcgat cctgggcccgg ctgccctacg acgtgagcct cgaaggcgag 300

gacaccatcg	tcgtcggcag	caccaagatc	aaggcgctcg	aggtcaagga	aggcccggcg	360
gcgctgccct	ggggcgacct	gggcgtcgac	gtcgtcgtcg	agtccaccgg	catcttcacc	420
aagcgcgaca	aggcccaggg	ccacctcgac	gcgggcgcca	agaaggatcat	catctccgcg	480
ccggccaccg	atgaggacat	caccatcgtg	ctcggcgtca	acgacgacaa	gtacgacggc	540
agccagaaca	tcatctccaa	cgcgctcgtg	accacgaact	gcctcgcccc	gctggcgaag	600
gtcatcaacg	acgagttcgg	catcgtcaag	ggcctgntga	ccaccatcca	cgcctacacc	660
cnggtccaga	acctgcagga	cggcccgcac	aaggatctgc	gccggggccc	cgccgccgcg	720
ctgaacatcg	tgccgacctc	caccggtgcc	gccaaggcca	tcggactggg	gctgcccag	780
ctgaagggca	agctcgacgg	ctacgcgctg	cgggtgccga	tccccaccgg	ctcggtcacc	840
gacctgaccg	ccgagctggg	caagtcggcc	accgtggacg	agatcaacgc	cgcgatga	898

<210> 186

<211> 268

<212> PRT

<213> Mycobacterium vaccae

<220>

<221> UNSURE

<222> (182)...(182)

<221> UNSURE

<222> (190)...(190)

<400> 186

Val	Thr	Ile	Arg	Val	Gly	Val	Asn	Gly	Phe	Gly	Arg	Ile	Gly	Arg	Asn
1				5					10					15	
Phe	Phe	Arg	Ala	Leu	Asp	Ala	Gln	Lys	Ala	Glu	Gly	Lys	Asn	Lys	Asp
			20					25					30		
Ile	Glu	Ile	Val	Ala	Val	Asn	Asp	Leu	Thr	Asp	Asn	Ala	Thr	Leu	Ala
		35					40					45			
His	Leu	Leu	Lys	Phe	Asp	Ser	Ile	Leu	Gly	Arg	Leu	Pro	Tyr	Asp	Val
	50					55				60					
Ser	Leu	Glu	Gly	Glu	Asp	Thr	Ile	Val	Val	Gly	Ser	Thr	Lys	Ile	Lys
65					70					75				80	
Ala	Leu	Glu	Val	Lys	Glu	Gly	Pro	Ala	Ala	Leu	Pro	Trp	Gly	Asp	Leu
				85					90				95		
Gly	Val	Asp	Val	Val	Val	Glu	Ser	Thr	Gly	Ile	Phe	Thr	Lys	Arg	Asp
			100					105					110		
Lys	Ala	Gln	Gly	His	Leu	Asp	Ala	Gly	Ala	Lys	Lys	Val	Ile	Ile	Ser
		115					120						125		
Ala	Pro	Ala	Thr	Asp	Glu	Asp	Ile	Thr	Ile	Val	Leu	Gly	Val	Asn	Asp
	130					135					140				
Asp	Lys	Tyr	Asp	Gly	Ser	Gln	Asn	Ile	Ile	Ser	Asn	Ala	Ser	Cys	Thr
145					150					155				160	
Thr	Asn	Cys	Leu	Gly	Pro	Leu	Ala	Lys	Val	Ile	Asn	Asp	Glu	Phe	Gly
			165						170					175	
Ile	Val	Lys	Gly	Leu	Xaa	Thr	Thr	Ile	His	Ala	Tyr	Thr	Xaa	Val	Gln
			180					185					190		
Asn	Leu	Gln	Asp	Gly	Pro	His	Lys	Asp	Leu	Arg	Arg	Ala	Arg	Ala	Ala
		195					200					205			
Ala	Leu	Asn	Ile	Val	Pro	Thr	Ser	Thr	Gly	Ala	Ala	Lys	Ala	Ile	Gly
	210						215					220			
Leu	Val	Leu	Pro	Glu	Leu	Lys	Gly	Lys	Leu	Asp	Gly	Tyr	Ala	Leu	Arg
225					230					235				240	
Val	Pro	Ile	Pro	Thr	Gly	Ser	Val	Thr	Asp	Leu	Thr	Ala	Glu	Leu	Gly
				245					250					255	
Lys	Ser	Ala	Thr	Val	Asp	Glu	Ile	Asn	Ala	Ala	Met				

260

265

<210> 187  
<211> 41  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (39)...(39)

<400> 187

Met	Asn	Lys	Ala	Glu	Leu	Ile	Asp	Val	Leu	Thr	Glu	Lys	Leu	Gly	Ser
1				5					10					15	
Asp	Arg	Arg	Gln	Ala	Thr	Ala	Ala	Val	Glu	Asn	Val	Val	Asp	Thr	Ile
			20					25					30		
Val	Ala	Ala	Val	Pro	Lys	Xaa	Val	Val							
			35					40							

<210> 188  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<221> unsure  
<222> (12)...(12)

<400> 188

atgaayaarg cngarctsat ygaygt

26

<210> 189  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<400> 189

atsgtrtgva cvacgttytc

20

<210> 190  
<211> 84  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Made in a lab

<221> unsure  
<222> (2)...(2)

<400> 190

gnactcattg acgtactcac tgagaagctg ggctcggatt gtcggcaage gactgcggca

60

atggagaacg tgggtccacac cata

84

<210> 191  
<211> 337  
<212> DNA  
<213> Mycobacterium vaccae

<220>  
<221> unsure  
<222> (2) ... (2)

<400> 191  
gnactcattg acgtactcac tgagaagctg ggctcggatt gtcgggaagc gactgcggcg 60  
gtggagaatg ttgtcgacac catcgtgcgc gccgtgcaca aggggtgagag cgtcaccatc 120  
accgggcttcg gtgttttcga gcagcgtcgt cgcgcagcac gcgtggcacg caatccgcgc 180  
accggcgaga ccgtgaaggt caagcccacc tcagtcccgg cattccgtcc cggcgctcag 240  
ttcaaggctg ttgtctcttg cgcacagaag cttccggccg aggggtccggc ggtcaagcgc 300  
gggtgtgaccg cgacgagcac cgcccgaag gcagcca 337

<210> 192  
<211> 111  
<212> PRT  
<213> Mycobacterium vaccae

<220>  
<221> UNSURE  
<222> (1) ... (1)

<400> 192  
Xaa Leu Ile Asp Val Leu Thr Glu Lys Leu Gly Ser Asp Arg Gln Ala  
1 5 10 15  
Thr Ala Ala Val Glu Asn Val Val Asp Thr Ile Val Arg Ala Val His  
20 25 30  
Lys Gly Glu Ser Val Thr Ile Thr Gly Phe Gly Val Phe Glu Gln Arg  
35 40 45  
Arg Arg Ala Ala Arg Val Ala Arg Asn Pro Arg Thr Gly Glu Thr Val  
50 55 60  
Lys Val Lys Pro Thr Ser Val Pro Ala Phe Arg Pro Gly Ala Gln Phe  
65 70 75 80  
Lys Ala Val Val Ser Gly Ala Gln Lys Leu Pro Ala Glu Gly Pro Ala  
85 90 95  
Val Lys Arg Gly Val Thr Ala Thr Ser Thr Ala Arg Lys Ala Ala  
100 105 110

<210> 193  
<211> 1164  
<212> DNA  
<213> Mycobacterium vaccae

<400> 193  
ggtaggcgcgc atcgagaagc gcccgccccg gttcacgggc gcctgatcat ggtgcgggcg 60  
gcgtgcgcgt acggcttcgg gacggcctca ctgctggccg gcgggttcgt gctgcgcgcc 120  
ctgcagggga cgctgcgc cctcggcgcg actccgggag aggtcgcgcc ggtggcgcg 180  
cgctgcgcga actaccgca cggcaagttc gtcaacctgg agccccgctc gggcatcacg 240  
atggatcgcg acctgcagcg gatgctgttg cgcgatctgg ccaacgccgc atcccagggc 300  
aagccgcccg gaccgatccc gctggccgag ccgcgaagg gggatccac tcccgcgcgc 360  
gcggcgggcca gctggtacgg ccattccagc gtgctgatcg aggtcgacgg ctaccgcgtg 420

ctggccgacc cggtgtggag caacagatgt tcgccctcac gggcggtcgg accgcagcgc 480  
atgcacgacg tcccgggtgcc gctggaggcg cttcccgcgc tggacgcggt ggtgatcagc 540  
cacgaccact acgaccacct cgacatcgac accatcgctc cgttggcgca caccacgcg 600  
gcccgcgttcg ttgtgccggtt gggcatcggc gcacacctgc gcaagtgggg cgtccccgag 660  
gcgcgggatcg tcgagtttga ctggcacgaa gccaccgcga tagacgacct gacgctggtc 720  
tgcacccccg cccggcactt ctccggacgg ttgtttctcc gcgactcgac gctgtggggc 780  
tcgtgggttg tcaccggctc gtcgcacaag gcgtttcttc gtggcgacac cggatacacg 840  
aagagcttcg ccgagatcgg cgacgagtac ggtccggttc atctgaccct gctgccgatc 900  
ggggcctacc atcccgcgtt cggcgacatc cacatgaacc ccgaggaggg ggtgcgcgcc 960  
catctggacc tgaccgaggt ggacaacagc ctgatgggtg ccatccactg ggcgacattc 1020  
cgctcgccc cgcatccgtg gtccgagccc gccgaacgcc tgctgaccgc tgccgacgcc 1080  
gagcgggtac gcctgaccgt gccgattccc ggtcagcggg tggaccgcga gtcgacgttc 1140  
gaccctgggt ggcggttctg aacc 1164

<210> 194

<211> 370

<212> PRT

<213> *Mycobacterium vaccae*

<400> 194

Met Val Arg Ala Leu Arg Tyr Gly Phe Gly Thr Ala Ser Leu Leu  
1 5 10 15  
Ala Gly Gly Phe Val Leu Arg Ala Leu Gln Gly Thr Pro Ala Ala Leu  
20 25 30  
Gly Ala Thr Pro Gly Glu Val Ala Pro Val Ala Arg Arg Ser Pro Asn  
35 40 45  
Tyr Arg Asp Gly Lys Phe Val Asn Leu Glu Pro Pro Ser Gly Ile Thr  
50 55 60  
Met Asp Arg Asp Leu Gln Arg Met Leu Leu Arg Asp Leu Ala Asn Ala  
65 70 75 80  
Ala Ser Gln Gly Lys Pro Pro Gly Pro Ile Pro Leu Ala Glu Pro Pro  
85 90 95  
Lys Gly Asp Pro Thr Pro Ala Pro Ala Ala Ala Ser Trp Tyr Gly His  
100 105 110  
Ser Ser Val Leu Ile Glu Val Asp Gly Tyr Arg Val Leu Ala Asp Pro  
115 120 125  
Val Trp Ser Asn Arg Cys Ser Pro Ser Arg Ala Val Gly Pro Gln Arg  
130 135 140  
Met His Asp Val Pro Val Pro Leu Glu Ala Leu Pro Ala Val Asp Ala  
145 150 155 160  
Val Val Ile Ser His Asp His Tyr Asp His Leu Asp Ile Asp Thr Ile  
165 170 175  
Val Ala Leu Ala His Thr Gln Arg Ala Pro Phe Val Val Pro Leu Gly  
180 185 190  
Ile Gly Ala His Leu Arg Lys Trp Gly Val Pro Glu Ala Arg Ile Val  
195 200 205  
Glu Leu Asp Trp His Glu Ala His Arg Ile Asp Asp Leu Thr Leu Val  
210 215 220  
Cys Thr Pro Ala Arg His Phe Ser Gly Arg Leu Phe Ser Arg Asp Ser  
225 230 235 240  
Thr Leu Trp Ala Ser Trp Val Val Thr Gly Ser Ser His Lys Ala Phe  
245 250 255  
Phe Gly Gly Asp Thr Gly Tyr Thr Lys Ser Phe Ala Glu Ile Gly Asp  
260 265 270  
Glu Tyr Gly Pro Phe Asp Leu Thr Leu Leu Pro Ile Gly Ala Tyr His  
275 280 285  
Pro Ala Phe Ala Asp Ile His Met Asn Pro Glu Glu Ala Val Arg Ala



290 295 300  
 His Leu Asp Leu Thr Glu Val Asp Asn Ser Leu Met Val Pro Ile His  
 305 310 315 320  
 Trp Ala Thr Phe Arg Leu Ala Pro His Pro Trp Ser Glu Pro Ala Glu  
 325 330 335  
 Arg Leu Leu Thr Ala Ala Asp Ala Glu Arg Val Arg Leu Thr Val Pro  
 340 345 350  
 Ile Pro Gly Gln Arg Val Asp Pro Glu Ser Thr Phe Asp Pro Trp Trp  
 355 360 365  
 Arg Phe  
 370

<210> 195  
 <211> 650  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 195  
 gacacaccag caccactgtt aacctcgcta gatcagtcgg ccgaacggaa ggacagccgt 60  
 gaccctgaaa accctagtag ccagcatgac cgctggggca gcagcagccg caacactcgg 120  
 cgctgccgcc gtgggtgtga cctcgattgc cgctgggtgc ggtgtcgccg gcgcgtcgcc 180  
 cgcggtgctg aacgcaccgc tgccttcgcg ccctgcccc gatctgcagg gaccgctggt 240  
 ctccaccttg agcgcgctgt cgggccccgg ctccttcgcc ggcgccaagg ccacctacgt 300  
 ccagggcggt ctcggccgca tcgaggcccg ggtggccgac agcggataca gcaacgccgc 360  
 ggccaagggc tacttcccgc tgagcttcac cgctgcgggc atcgaccaga acggtccgat 420  
 cgtgaccgcc aacgtcaccg cggcggcccc gacggggcgc gtggccaccc agccgctgac 480  
 gttcatcgcc gggccgagcc cgaccgatg gcagctgtcc aagcagtcg cactggccct 540  
 gatgtccgcg gtgggtgatc tcccgcacga ttctgggtcg cagcgccgtc acatgtgtgg 600  
 cggcgctcgg gctgggtggg tgcctgggcg gctgcgcgca agatgaacat 650

<210> 196  
 <211> 159  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 196  
 Met Thr Ala Gly Ala Ala Ala Ala Thr Leu Gly Ala Ala Ala Val  
 1 5 10 15  
 Gly Val Thr Ser Ile Ala Val Gly Ala Gly Val Ala Gly Ala Ser Pro  
 20 25 30  
 Ala Val Leu Asn Ala Pro Leu Leu Ser Ala Pro Ala Pro Asp Leu Gln  
 35 40 45  
 Gly Pro Leu Val Ser Thr Leu Ser Ala Leu Ser Gly Pro Gly Ser Phe  
 50 55 60  
 Ala Gly Ala Lys Ala Thr Tyr Val Gln Gly Gly Leu Gly Arg Ile Glu  
 65 70 75 80  
 Ala Arg Val Ala Asp Ser Gly Tyr Ser Asn Ala Ala Lys Gly Tyr  
 85 90 95  
 Phe Pro Leu Ser Phe Thr Val Ala Gly Ile Asp Gln Asn Gly Pro Ile  
 100 105 110  
 Val Thr Ala Asn Val Thr Ala Ala Ala Pro Thr Gly Ala Val Ala Thr  
 115 120 125  
 Gln Pro Leu Thr Phe Ile Ala Gly Pro Ser Pro Thr Gly Trp Gln Leu  
 130 135 140  
 Ser Lys Gln Ser Ala Leu Ala Leu Met Ser Ala Val Ile Ala Ala  
 145 150 155

<210> 197  
 <211> 285  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 197

Met Gln Val Arg Arg Val Leu Gly Ser Val Gly Ala Ala Val Ala Val  
 1 5 10 15  
 Ser Ala Ala Leu Trp Gln Thr Gly Val Ser Ile Pro Thr Ala Ser Ala  
 20 25 30  
 Asp Pro Cys Pro Asp Ile Glu Val Ile Phe Ala Arg Gly Thr Gly Ala  
 35 40 45  
 Glu Pro Gly Leu Gly Trp Val Gly Asp Ala Phe Val Asn Ala Leu Arg  
 50 55 60  
 Pro Lys Val Gly Glu Gln Ser Val Gly Thr Tyr Ala Val Asn Tyr Pro  
 65 70 75 80  
 Ala Gly Phe Asp Phe Asp Lys Ser Ala Pro Met Gly Ala Ala Asp Ala  
 85 90 95  
 Ser Gly Arg Val Gln Trp Met Ala Asp Asn Cys Pro Asp Thr Lys Leu  
 100 105 110  
 Val Leu Gly Gly Met Ser Gln Gly Ala Gly Val Ile Asp Leu Ile Thr  
 115 120 125  
 Val Asp Pro Arg Pro Leu Gly Arg Phe Thr Pro Thr Pro Met Pro Pro  
 130 135 140  
 Arg Val Ala Asp His Val Ala Ala Val Val Val Phe Gly Asn Pro Leu  
 145 150 155 160  
 Arg Asp Ile Arg Gly Gly Gly Pro Leu Pro Gln Met Ser Gly Thr Tyr  
 165 170 175  
 Gly Pro Lys Ser Ile Asp Leu Cys Ala Leu Asp Asp Pro Phe Cys Ser  
 180 185 190  
 Pro Gly Phe Asn Leu Pro Ala His Phe Ala Tyr Ala Asp Asn Gly Met  
 195 200 205  
 Val Glu Glu Ala Ala Asn Phe Ala Arg Leu Glu Pro Gly Gln Ser Val  
 210 215 220  
 Glu Leu Pro Glu Ala Pro Tyr Leu His Leu Phe Val Pro Arg Gly Glu  
 225 230 235 240  
 Val Thr Leu Glu Asp Ala Gly Pro Leu Arg Glu Gly Asp Ala Val Arg  
 245 250 255  
 Phe Thr Ala Ser Gly Gly Gln Arg Val Thr Ala Thr Ala Pro Ala Glu  
 260 265 270  
 Ile Leu Val Trp Glu Met His Ala Gly Leu Gly Ala Ala  
 275 280 285

<210> 198  
 <211> 743  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 198

ggatccgcgg	caccggctgg	tgacgaccaa	gtacaaccgc	gcccgcacct	ggacggccga	60
gaactccgtc	ggcatcggcg	gcgcgtacct	gtgcatctac	gggatggagg	gccccggcgg	120
ctatcagttc	gtcggccgca	ccaccaggt	gtggagtcgt	taccgccaca	cggcgccggt	180
cgaaccgcga	agtcctggc	tgctgcggtt	tttcgaccga	atttcgtggt	atccggtgtc	240
ggccgaggag	ctgctggaat	tgcgagccga	catggccgca	ggccggggct	cggtcgacat	300
caccgacggc	gtgttctccc	tcgccgagca	cgaacggttc	ctggccgaca	acgccgacga	360
catcgccgcg	ttccgttccc	ggcaggcggc	cgcgttctcc	gccgagcgga	ccgcgtgggc	420
ggccgccggc	gagttcgacc	gcgcgagaaa	agccgcgtcg	aaggccaccg	acgccgatac	480

cggggacctg gtgctctacg acggtgaaga ggggggtcgac gctccgttcg cgtcgagcgt 540  
 gtggaaggtc gacgtcgccg tcggtgaccg ggtgggtggcc ggacagccgt tgctggcgct 600  
 ggaggcgatg aagatggaga ccgtgctgcg cggcccgccg gacgggggtg taccagat 660  
 cctgggtctcc gctgggcatc tcgtcgatcc cggcacccca ctggtcgtgg tcggcaccgg 720  
 agtgcgcgca tgagcgccgt cga 743

<210> 199  
 <211> 243  
 <212> PRT  
 <213> Mycobacterium vaccae

<400> 199  
 Asp Pro Arg His Arg Leu Val Thr Thr Lys Tyr Asn Pro Ala Arg Thr  
 1 5 10 15  
 Trp Thr Ala Glu Asn Ser Val Gly Ile Gly Gly Ala Tyr Leu Cys Ile  
 20 25 30  
 Tyr Gly Met Glu Gly Pro Gly Gly Tyr Gln Phe Val Gly Arg Thr Thr  
 35 40 45  
 Gln Val Trp Ser Arg Tyr Arg His Thr Ala Pro Phe Glu Pro Gly Ser  
 50 55 60  
 Pro Trp Leu Leu Arg Phe Phe Asp Arg Ile Ser Trp Tyr Pro Val Ser  
 65 70 75 80  
 Ala Glu Glu Leu Leu Glu Leu Arg Ala Asp Met Ala Ala Gly Arg Gly  
 85 90 95  
 Ser Val Asp Ile Thr Asp Gly Val Phe Ser Leu Ala Glu His Glu Arg  
 100 105 110  
 Phe Leu Ala Asp Asn Ala Asp Asp Ile Ala Ala Phe Arg Ser Arg Gln  
 115 120 125  
 Ala Ala Ala Phe Ser Ala Glu Arg Thr Ala Trp Ala Ala Ala Gly Glu  
 130 135 140  
 Phe Asp Arg Ala Glu Lys Ala Ala Ser Lys Ala Thr Asp Ala Asp Thr  
 145 150 155 160  
 Gly Asp Leu Val Leu Tyr Asp Gly Asp Glu Arg Val Asp Ala Pro Phe  
 165 170 175  
 Ala Ser Ser Val Trp Lys Val Asp Val Ala Val Gly Asp Arg Val Val  
 180 185 190  
 Ala Gly Gln Pro Leu Leu Ala Leu Glu Ala Met Lys Met Glu Thr Val  
 195 200 205  
 Leu Arg Ala Pro Ala Asp Gly Val Val Thr Gln Ile Leu Val Ser Ala  
 210 215 220  
 Gly His Leu Val Asp Pro Gly Thr Pro Leu Val Val Val Gly Thr Gly  
 225 230 235 240  
 Val Arg Ala

<210> 200  
 <211> 858  
 <212> DNA  
 <213> Mycobacterium vaccae

<400> 200  
 gaaatccgc gtctgaaacc ctcttttcgc ggcgccctc aggcggttaa gggggccaag 60  
 cggattgaaa aatgttcgct gaatgagcct gaaattgcgc gtggctcttg gaaatcagca 120  
 gcgatgggtt taccgtgtcc actagtcggt ccaaagagga cactgggtt tcggagggtt 180  
 tgcataaaca aagcagagct catcgacgta ctactgaga agctgggctc ggatcgctcg 240  
 caagcgactg cggcggtgga gaacgttgct gacaccatcg tgcgcgccgt gcacaagggt 300  
 gagagcgta ccatcacggg ctctgggtgtt ttgagcagc gtcgtcgccg agcacgcgtg 360  
 gcacgcaatc cgcgcaccgg cgagaccgtg aaggtcaagc ccacctcagt cccggcattc 420

```

cgtcccgccg ctcagttcaa ggctgttgct tctggcgccac agaagcttcc ggccgagggg 480
ccggcggtca agcgcggtgt gaccgcgacg agcaccgccc gcaaggcagc caagaaggct 540
ccggccaaga aggtgcccgc gaagaaggcc gcgccggcca agaaggctcc ggccaagaag 600
gctgcgacca aggtgcacc ggccaagaag gccactgccg ccaagaaggc cgcgcccggcc 660
aagaaggcca ctgccgcca gaaggctgca ccggccaaga aggtccggc caagaaggct 720
gcgaccaagg ctgcaccggc caagaaggct ccggccaaga aggcgcgac caaggctgca 780
ccggccaaga aggtccggc cgccaagaag gcgcccgcca agaaggctcc ggccaagcgc 840
ggcgacgca agtaagtc
858

```

```

<210> 201
<211> 223
<212> PRT
<213> Mycobacterium vaccae

```

<400> 201

```

Met Asn Lys Ala Glu Leu Ile Asp Val Leu Thr Glu Lys Leu Gly Ser
 1          5          10          15
Asp Arg Arg Gln Ala Thr Ala Ala Val Glu Asn Val Val Asp Thr Ile
 20          25          30
Val Arg Ala Val His Lys Gly Glu Ser Val Thr Ile Thr Gly Phe Gly
 35          40          45
Val Phe Glu Gln Arg Arg Arg Ala Ala Arg Val Ala Arg Asn Pro Arg
 50          55          60
Thr Gly Glu Thr Val Lys Val Lys Pro Thr Ser Val Pro Ala Phe Arg
 65          70          75          80
Pro Gly Ala Gln Phe Lys Ala Val Val Ser Gly Ala Gln Lys Leu Pro
 85          90          95
Ala Glu Gly Pro Ala Val Lys Arg Gly Val Thr Ala Thr Ser Thr Ala
100          105          110
Arg Lys Ala Ala Lys Lys Ala Pro Ala Lys Lys Ala Ala Lys Lys
115          120          125
Ala Ala Pro Ala Lys Lys Ala Pro Ala Lys Lys Ala Ala Thr Lys Ala
130          135          140
Ala Pro Ala Lys Lys Ala Thr Ala Ala Lys Lys Ala Ala Pro Ala Lys
145          150          155          160
Lys Ala Thr Ala Ala Lys Lys Ala Ala Pro Ala Lys Lys Ala Pro Ala
165          170          175
Lys Lys Ala Ala Thr Lys Ala Ala Pro Ala Lys Lys Ala Pro Ala Lys
180          185          190
Lys Ala Ala Thr Lys Ala Ala Pro Ala Lys Lys Ala Pro Ala Ala Lys
195          200          205
Lys Ala Pro Ala Lys Lys Ala Pro Ala Lys Arg Gly Gly Arg Lys
210          215          220

```

```

<210> 202
<211> 570
<212> DNA
<213> Mycobacterium vaccae

```

<400> 202

```

agacagacag tgatcgacga aaccctcttc catgccgagg agaagatgga gaaggccgtc 60
tcgggtggcac ccgacgacct ggcgtcgatt cgtaccggcc gcgcgaaccc cggcatgttc 120
aaccggatca acatcgacta ctacggcgcc tccacccgga tcacgcagct gtccagcatc 180
aacgtgcccg aggcgcgcat ggtggtgata aagccctacg aggcgagcca gctgcgccctc 240
atcgaggatg cgatccgcaa ctccgacctc gggtcaatc cgaccaacga cggcaacatc 300
atccgggtgt cgatcccgca gctcaccgag ggcgcgcc gcgacctggt caagcaggcc 360
aaggccaagg gcgaggacgc caaggtgtcg gtgcgcaaca tccgtcgcaa ggcatggag 420

```

```
gaactctccc ggatcaagaa ggacggcgac gccggcggaag accaagtga cgcgcgcgag 480
aaggatctcg acaagagcac ccaccagtac acgaatcaga tcgacgaact ggtcaagcac 540
aaggaaggcg agttgctgga ggtctgacca 570
```

```
<210> 203
<211> 187
<212> PRT
<213> Mycobacterium vaccae
```

```
<220>
<221> UNSURE
<222> (186)...(186)
```

```
<400> 203
Val Ile Asp Glu Thr Leu Phe His Ala Glu Glu Lys Met Glu Lys Ala
 1           5           10          15
Val Ser Val Ala Pro Asp Asp Leu Ala Ser Ile Arg Thr Gly Arg Ala
 20          25          30
Asn Pro Gly Met Phe Asn Arg Ile Asn Ile Asp Tyr Tyr Gly Ala Ser
 35          40          45
Thr Pro Ile Thr Gln Leu Ser Ser Ile Asn Val Pro Glu Ala Arg Met
 50          55          60
Val Val Ile Lys Pro Tyr Glu Ala Ser Gln Leu Arg Leu Ile Glu Asp
 65          70          75          80
Ala Ile Arg Asn Ser Asp Leu Gly Val Asn Pro Thr Asn Asp Gly Asn
 85          90          95
Ile Ile Arg Val Ser Ile Pro Gln Leu Thr Glu Glu Arg Arg Arg Asp
100         105         110
Leu Val Lys Gln Ala Lys Ala Lys Gly Glu Asp Ala Lys Val Ser Val
115         120         125
Arg Asn Ile Arg Arg Lys Ala Met Glu Glu Leu Ser Arg Ile Lys Lys
130         135         140
Asp Gly Asp Ala Gly Glu Asp Glu Val Thr Arg Ala Glu Lys Asp Leu
145         150         155         160
Asp Lys Ser Thr His Gln Tyr Thr Asn Gln Ile Asp Glu Leu Val Lys
165         170         175
His Lys Glu Gly Glu Leu Leu Glu Val Xaa Pro
180         185
```

```
<210> 204
<211> 1364
<212> DNA
<213> Mycobacterium vaccae
```

```
<400> 204
cgacctccac ccgggcggtga ggccaaccac taggctggtc accagtagtc gacggcacac 60
ttcaccgaaa aaatgaggac agaggagaca cccgtgacga tccgtgttgg tgtgaacggc 120
ttcggcgcta tcggacgcaa cttcttccgc gcgctggacg cgcagaaggc cgaaggcaag 180
aacaaggaca tcgagatcgt cgcggtcaac gacctcaccg acaacgccac gctggcgcac 240
ctgctgaagt tcgactcgat cctgggcccgg ctgccctacg acgtgagcct cgaaggcgag 300
gacaccatcg tcgtcggcag caccaagatc aaggcgctcg aggtcaagga aggcccggcg 360
gcgctgccct ggggcgacct gggcgtcgac gtcgctcgcg agtccaccgg catcttcacc 420
aagcgcgaca agggccaggg ccacctcgac gcgggcgcca agaaggcat catctccgag 480
ccggccaccg atgaggacat caccatcggt ctcggcgta acgacgacaa gtacgacggc 540
agccagaaca tcatctccaa cgcgtcgtgc accacgaact gcctcgggccc gctggcgaag 600
gtcatcaacg acgagttcgg catcgtaag ggctgatga ccaccatcca cgctacacc 660
caggtccaga acctgcagga cggccgcac aaggatctgc gccgggcccg cgccgcggcg 720
```

```

ctgaacatcg tgccgacctc caccgggtgcc gccaaaggcca tcggactggt gctgcccag 780
ctgaagggca agctcgacgg ctacgcgctg cgggtgccga tccccaccgg ctcggtcacc 840
gacctgaccg ccgagctggg caagtcggcc accgtggacg agatcaacgc cgcgatgaag 900
gctgcggccg agggcccgct caagggcatc ctcaagtact acgacgcccc gatcgtgtcc 960
agcgacatcg tcaccgatcc gcacagctcg atcttcgact cgggtctgac caaggtcatc 1020
gacaaccagg ccaagggtcgt gtcctggtac gacaacgagt ggggctactc caaccgcctc 1080
gtcgacctgg tcgccctggt cggcaagtgc ctgtaggggc gagcgaagcg acggggagaac 1140
agaggcgcca tggcgatcaa gtcactcgac gaccttctgt ccgaaggggt gacggggcgg 1200
ggcgactcgt tgcgctccga cctgaacgtc ccctcgcacg gcgacacgat caccgaccgg 1260
ggcgcatca tcgcctcggg gccgacgttg aaggcgttga gtgacgccgg cgccaagggtg 1320
gtcgtcaccg cgcactcggg caggcccaag ggtgagccgg atcc 1364

```

<210> 205

<211> 340

<212> PRT

<213> Mycobacterium vaccae

<400> 205

```

Val Thr Ile Arg Val Gly Val Asn Gly Phe Gly Arg Ile Gly Arg Asn
 1          5          10          15
Phe Phe Arg Ala Leu Asp Ala Gln Lys Ala Glu Gly Lys Asn Lys Asp
 20          25          30
Ile Glu Ile Val Ala Val Asn Asp Leu Thr Asp Asn Ala Thr Leu Ala
 35          40          45
His Leu Leu Lys Phe Asp Ser Ile Leu Gly Arg Leu Pro Tyr Asp Val
 50          55          60
Ser Leu Glu Gly Glu Asp Thr Ile Val Val Gly Ser Thr Lys Ile Lys
 65          70          75          80
Ala Leu Glu Val Lys Glu Gly Pro Ala Ala Leu Pro Trp Gly Asp Leu
 85          90          95
Gly Val Asp Val Val Val Glu Ser Thr Gly Ile Phe Thr Lys Arg Asp
 100          105          110
Lys Ala Gln Gly His Leu Asp Ala Gly Ala Lys Lys Val Ile Ile Ser
 115          120          125
Ala Pro Ala Thr Asp Glu Asp Ile Thr Ile Val Leu Gly Val Asn Asp
 130          135          140
Asp Lys Tyr Asp Gly Ser Gln Asn Ile Ile Ser Asn Ala Ser Cys Thr
 145          150          155          160
Thr Asn Cys Leu Gly Pro Leu Ala Lys Val Ile Asn Asp Glu Phe Gly
 165          170          175
Ile Val Lys Gly Leu Met Thr Thr Ile His Ala Tyr Thr Gln Val Gln
 180          185          190
Asn Leu Gln Asp Gly Pro His Lys Asp Leu Arg Arg Ala Arg Ala Ala
 195          200          205
Ala Leu Asn Ile Val Pro Thr Ser Thr Gly Ala Ala Lys Ala Ile Gly
 210          215          220
Leu Val Leu Pro Glu Leu Lys Gly Lys Leu Asp Gly Tyr Ala Leu Arg
 225          230          235          240
Val Pro Ile Pro Thr Gly Ser Val Thr Asp Leu Thr Ala Glu Leu Gly
 245          250          255
Lys Ser Ala Thr Val Asp Glu Ile Asn Ala Ala Met Lys Ala Ala Ala
 260          265          270
Glu Gly Pro Leu Lys Gly Ile Leu Lys Tyr Tyr Asp Ala Pro Ile Val
 275          280          285
Ser Ser Asp Ile Val Thr Asp Pro His Ser Ser Ile Phe Asp Ser Gly
 290          295          300
Leu Thr Lys Val Ile Asp Asn Gln Ala Lys Val Val Ser Trp Tyr Asp

```



Ala Leu Pro Gln Leu Thr Asp Glu Gln Arg Ala Ala  
1 5 10

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